APR 25 1927

April, 1927. Vol. XXI., No. 2.

The British Journal of Tuberculosis.

EDITED BY

T. N. KELYNACK, M.D.

CONTENTS.

SYMPOSIUM:

The Value of X Rays in the Diagnosis and Management of Cases of Intra-Thoracic Tuberculosis.

Communications from Stanley Melville, Physician-at-Law, M.D., M.R.C.S., L.R.C.P., L.S.A.; J. E. A. Lyeham, B.A., M.D., M.R.C.P., D.M.R.E.; R. A. Young, C.B.E., M.D., Age. F.R.C.P.; John Guy, M.D., D.P.H., F.R.C.P.S.; Maurice A. J. Hayes, F.R.C.P.I.; James Crocket, M.D., D.P.H., F.R.C.P.I.; H. Martin Beale, M.D., D.M.R.E.; W. Cranston Tuberculi, M.D., Ch.B., D.M.R.E.; W. H. Dickinson, O.B.E., M.D., M.R.C.P.E., D.P.H.; A. R. Trail, M.C., M.A., M.D.; D. E. Watson, M.B., Ch.B.

ORIGINAL ARTICLES:

X Rays in a Sanatorium. By J. E. A. Lyeham, M.D., M.R.C.P., D.M.R.E.

Lipiodol Injections. By F. G. Chandler, M.A., M.D., F.R.C.P.

Occupational Therapy as Adjunct in the Treatment of Tuberculosis. By J. E. McDougall, M.D., M.R.C.P.

A Visit to Vallesford Sanatorium. By F. W. Cockey, M.D., D.P.H.

ASSOCIATIONS AND INSTITUTIONS:

Selbrigg Sanatorium, Holt, Norfolk.

NOTICES OF BOOKS.

PREPARATIONS AND APPLIANCES.

THE OUTLOOK.

London: Baillière, Tindall and Cox.

7 & 8, Henrietta Street, Covent Garden, W.C.2.

Published Quarterly. Price Per Issue 2/6, post free 2/10. Annual Subscription, 10/- Post Free.

Agents for the United States:

G. E. STECHERT & CO., 151-155, West 25th Street, New York City.

Single Copies, $0.60 net. Annual Subscription $2.50, post free.

POCKET SPITTING-FLASKS.

No. 3 D/P. No. 4 D/P.

Fitted with Metal Screw Caps.

Fitted with Solid Non-Absorbent Rubber Plug.

Fitted with Screw Nickelled Gunmetal Screw Cap.

PRICES ON APPLICATION.

BEATSON, CLARK & CO., LTD., Medical Glass Manufacturers,

ROTHERHAM.

THE BRITISH JOURNAL
OF
TUBERCULOSIS

Vol. XXI. April, 1927. No. 2.

SYMPOSIUM.

THE VALUE OF X RAYS IN THE DIAGNOSIS AND MANAGEMENT OF CASES OF INTRA-THORACIC TUBERCULOSIS

RÖNTGEN'S discovery of X rays brought a new power into the science and art of medicine. In this country we have been slow to recognize the advantages of this new agency in the study of chest cases. X rays are proving of value in the investigation of the subjects of intra-thoracic tuberculosis, but adequate equipment, technical skill, radiological experience, and a sound clinical sense are all necessary if reliable results are to be obtained. Through the kind co-operation of a number of physicians and radiologists we are enabled to present a collection of independent opinions regarding the value of X rays in the investigation of cases of intra-thoracic tuberculosis. These communications it is believed will prove of interest and practical service.

FROM STANLEY MELVILLE,

BARRISTER-AT-LAW, M.D., M.R.C.S., L.R.C.P., L.S.A.,

Radiologist to St. George's Hospital and to the Hospital for Diseases of the Chest, Brompton; Hon. Radiologist to King Edward VII. Sanatorium, Midhurst, and the Royal National Hospital for Consumption, Ventnor; Consulting Radiologist to King Edward VII. Memorial Hospital, Ealing, and Royal National Orthopædic Hospital; Author of "Annual Reports," X-ray Department, Brompton Hospital.

Let me begin by a confession of faith, the result of nearly seventeen years spent at Brompton Hospital. I believe more than ever that pulmonary tuberculosis is a clinical disease from start to finish. I believe, also, that of all the ancillary aids to diagnosis there is none that can compare with radiography if *properly applied* (and that is the crux of the whole matter). By means of an X-ray examination we have the most certain, the most definite, and the earliest available means whereby an accurate and complete diagnosis may be arrived at.

I would lay down certain axioms: (*a*) That at quite an early stage of intrathoracic tuberculous disease and before definite physical signs are available, an infiltration of the lung parenchyma can be seen; (*b*) that a series of X-ray examinations (during, say, a period of six months), if found to give results which are *consistently negative*, may be taken as conclusive evidence of the non-existence of pulmonary tuberculosis; (*c*) that in cases in which physical signs are present it may be assumed that the initial stage of the disease has been passed, and that the X-ray examination will reveal more and wider distribution of disease than can be found by either auscultation or percussion. This is above all true of cases in which the tuberculous lesion is deep-seated or in which there is associated emphysema. The evidence upon which the radiologist is justified in arriving at a conclusion that the case is one of pulmonary tuberculosis depends, apart from the clinical history, upon the following factors: (1) Alteration in the excursion or in the movement of the diaphragm on the affected side; (2) the presence of the small, vertically placed, and feebly acting heart, which affords evidence of great importance, and for the significance of which the reader may be referred to the work of the late Arthur Latham carried out in conjunction with the writer; (3) the hazy appearance of a localized area in the lung field, most commonly situated in one or other upper zone, and usually in the infraclavicular region. This hazy area shows fine stippling, and to it, and to it only, is the name of "infiltration" given. The stippling is caused by the deposit of the tubercle bacillus with its surrounding zone of irritative pneumonia; coalescence soon takes place between the individual millet-seed deposits. Such would be the picture of an early invasion. The ultimate result may be of several kinds; the infiltrated area may become fibrosed, in which case scar tissue is formed. This follows the course of scar tissue elsewhere, and contracts, leaving only a small puckered scar on the lung surface. Again, there may be coagulation necrosis, in which case there is softening, caseation, and the production of a cavity. A small cavity (especially if situated in the upper lung zone and behind the clavicle) may readily escape clinical observation, its presence, even years later, being revealed accidentally when examining the lungs, as possibly for an acute caseous broncho-pneumonia. Lipiodol has been found of great value in the diagnosis of cavities where it is a question as to their being connected with a bronchus. The fluid level in such cases can be well demonstrated if the patient be examined in the erect posture. And now a word as to treatment. The value of X rays is in no way better shown than where there is a question of operative measures: (1) In the production of artificial pneumothorax in order to determine the condition of the more sound lung; also to determine, at times, the most favourable site for the introduction of the operator's needle, and to note

thereafter the progress of the collapse. Finally, where the lung is held by adhesions, to determine the quality and the position of the adhesion prior to cauterization. (2) Prior to the operation of thoracoplasty: in cases, for instance, in which there is associated bronchiectasis, in order to determine possible tuberculous infection of the apparently non-tuberculous lung.

FROM J. E. A. LYNHAM,

B.A., M.D., M.R.C.P., D.M.R.E.,

Radiologist Mount Vernon Hospital for Tuberculosis and Diseases of the Chest; Assistant in the Electrical and Radio-Therapeutic Department of the London Cancer Hospital; late Vice-President Electro-Therapeutic Section of the Royal Society of Medicine.

Perhaps the chief value of X-ray examination in tuberculosis of the lungs is the permanent record that can be made of the appearances in the chest for comparison with other films taken subsequently in the course of the case. But of almost equal value are the estimates that can be made of the extent of the disease, and the confirmation of the clinical signs. The grosser lesions, such as consolidation, thickening of the pleura, pneumothorax, pleural effusions, and displacements of the heart and mediastinum, are easily demonstrable by radiological methods. Frequently when the physical signs are indefinite as to a localized lesion the film will give confirmatory evidence, and occasionally unsuspected disease masked by surrounding emphysema is revealed. The detection of fibrotic changes of a cicatricial character, of calcification, and of compensatory emphysema is sometimes of assistance in prognosis. The presence of suspected cavitation can often be shown, but not always; for the density of the surrounding diseased lung may be sufficient to counter the translucence, and a cavity filled with fluid may appear as an ill-defined density, but where a fluid level is present it can almost invariably be seen. It is, of course, possible for tuberculosis to exist and for the bacilli to be found in the sputum without the presence of such relatively massive changes as will alter the lung shadows; but if the disease is progressive, changes are soon detected, and it is not of frequent occurrence that a patient comes for clinical examination before some evidence can be produced in a film. It seems probable that the small opaque shadows so frequently seen in the hilar regions are sometimes due to caseation of "latent" tuberculosis, and that the appearance of bacilli in the sputum is the result of a secondary infection, with local breaking down of one or more of these foci. Secondary evidence given by the films may be of use in assessing a case. Retraction of the apices, alterations of contour such as increased obliquity of the ribs at one side, indrawing of the ribs corresponding to the root levels, deviations of the heart shadow from the normal, the

discovery of shadows suggesting other diseases such as neoplasms, etc., may all contribute towards arriving at a correct diagnosis. But it should never be forgotten that a film is only a record of shadows, and that deductions made from it should be considered in conjunction with the evidence produced by ordinary clinical methods. The film is of great value as a record, as a means of checking and confirming physical signs, as a help in elucidating obscure signs, and sometimes in indicating directions in which further investigation is desirable, but it is unsound practice to depend on the film for diagnosis; it is usually better to regard abnormal shadows as suggestions rather than as facts.

FROM R. A. YOUNG,

C.B.E., M.D., B.SC., F.R.C.P.,

Senior Physician and Lecturer on Therapeutics, Middlesex Hospital; Physician to the Consumption Hospital, Brompton; Consulting Physician, King Edward VII. Sanatorium, Midhurst.

Rightly used, the X rays are of great and increasing value in the diagnosis of intrathoracic tuberculosis, in the determination of the extent and localization of the disease, and in the choice of treatment. At the same time they have the limitations and the dangers of all mechanical or instrumental means of diagnosis. Wrongly used, they may therefore be misleading. The limitations of their usefulness depend partly on the mechanism and partly on the human factor. It must not be forgotten that the appearances in an X-ray film are those of the shadows of the lesions present, and that the earliest effects of tuberculous deposit may be catarrhal, giving rise to no gross reactions sufficient to cast shadows, and yet enough to produce symptoms and signs. The improvements in technique are certainly likely to lead to greater definition in the appearances obtained, and increasing experience will no doubt eventually enable us to interpret the changes seen more accurately. Even so, the eventual criteria of the activity of a disease process within the lung must depend upon the clinical manifestations, notably the symptoms and the signs. In my opinion the X-ray findings should not be looked at by the clinician until after he has seen and examined the patient. The ideal arrangement is for the clinician and the X-ray expert to collaborate in their interpretation after each has completed his examination. The X rays, then, give most helpful information, not so much in diagnosis as in establishing the character and extent of the lesions, and especially in demonstrating complications like effusion or localized pneumothorax. Screen examinations also give valuable information as to movements obtainable in no other way. For such purposes the X rays are invaluable, and indeed in the decision

as to the suitability of any case for treatment by artificial pneumothorax they are indispensable, except where this is carried out as an emergency measure for hæmoptysis.

FROM JOHN GUY,

M.D., D.P.H., F.R.C.P.E.,

Deputy Medical Officer of Health and Tuberculosis Officer for the City of Edinburgh; Lecturer on Tuberculosis in the School of the Medical Royal Colleges of Edinburgh; Author of "Pulmonary Tuberculosis," etc.

The diagnosis of some cases of tuberculosis is at times a matter of extreme difficulty. Indeed, in a few cases it amounts to intelligent surmise. In order to reduce the number of such cases to the irreducible minimum or to cause them to disappear altogether, every weapon that can be added to our armamentarium should be added. In a good X-ray outfit we have a most valuable aid to diagnosis. Indeed, no dispensary or institution where chest work is done is complete without one. It should be clearly understood that the X-ray examination is not an alternative means of diagnosis, but is complemental to the older methods. Every worker of experience meets cases occasionally when the most careful physical examination fails to record the presence of tuberculosis in the lung, and yet a good photograph shows a focus unmistakably, and later, when the sputum is examined, tubercle bacilli are discovered in the sputum. Again, there are many cases in which the physical examination would indicate a comparatively small lesion, but the X rays demonstrate a much wider involvement. In differential diagnosis an X-ray outfit is often of the greatest possible assistance. In pneumothorax work an X-ray apparatus is absolutely essential. The patient should be examined after every refill so as to give the physician a correct idea of the amount of collapse produced and as to the frequency of the refills. The same applies in lipiodol work, where it is, of course, also essential. There should be the closest co-operation between the physician and the X-ray operator—the closer the better. In my own judgment the clinical expert should be his own X-ray expert. There is no need for the clinician to be an X-ray expert in the mechanical side of X-ray work, but when it comes to screening or interpreting a photo he alone can co-relate the clinical finds with the X-ray results. Therefore, where possible the tuberculosis officer should have access to an X-ray outfit to screen his own cases and take such photographs as he deems desirable.

FROM MAURICE R. J. HAYES,
F.R.C.S.I.,
Professor of Materia Medica and Therapeutics, University College, Dublin; Consulting Radiologist to the National Maternity Hospital, and St. Mary's Hospital for Tuberculous Children, Cappagh, Dublin; formerly Radiologist, Mater Misericordiæ Hospital, Dublin.

The public believe, as do many doctors, that the diagnosis of pulmonary tuberculosis can be definitely and readily established by X rays alone. Some radiologists hold this view also, and they are fortified in it by their success in those cases which may not have had a thorough or systematic clinical examination. It is somewhat natural for one who employs particular methods to extol them, and for the beginner to be dogmatic, but such uncontrolled enthusiasm begets error. X rays ought not to be regarded as a short-cut to the diagnosis of any of the diseases to which they are applicable, neither should they be considered to be the ultimate arbiter in any given case. In the diagnosis of pulmonary tuberculosis X rays should not be regarded otherwise than as an aid to the solution of the problem, and the information which they give is but a part, and often a very important part, of the whole clinical picture; and its value will depend on the skill of the radiologist, on his experience, and his ability intelligently to interpret the shadows which he finds. To do this successfully there must be the closest co-operation between the physician and the radiologist. The art of interpretation can be acquired only by long experience of a great number of cases, and it is rarely that the clinician has the time or the opportunity to become expert in it. It seems to us to be impossible and imprudent, in the majority of cases, to make a positive diagnosis of pulmonary tuberculosis solely by X rays, regardless of the clinical or physical manifestations of the disease. Indeed, with modern apparatus and improved technique, which give greater detail, the question of interpretation is becoming increasingly difficult, added to which there is sometimes the subconscious inclination to read into negatives more than is really in them. Errors in diagnosis are inevitable, but they can be minimized by prudence and common sense, and by a more thorough appreciation of the possibilities and limitations in the field of X-ray diagnosis by the radiologist and the physician alike. Radioscopy and radiography are essential for a complete X-ray examination of the chest. The earliest signs of the disease are deficient illumination on full inspiration of the affected area, and restricted or irregular movement of the diaphragm on the affected side. These are motile phenomena recognizable on the screen. The negative frequently shows deposits which may be missed by screen examination, it gives much more detail, and it can be quietly studied at leisure. It

will also direct the attention of the physician to particular areas where suspicious shadows are shown, and it will serve as a permanent and trustworthy record for future reference and comparison. X-ray examination almost invariably reveals the extent of the disease to be much greater than was suspected, and where there is clinical evidence of a lesion in one lung, deposits are frequently found bilaterally. The radiologist is frequently asked to express an opinion as to whether the disease is still active. There are no special characters radioscopically or radiographically which answer this question. The amount of fibrosis, the density of the foci and their well-defined clear-cut borders may help as a guide, but nothing more. There are many other aspects of this question which deserve consideration did space permit, but suffice it to say that X rays have actually and metaphorically shed a new and a valuable light on the diagnosis and management of pulmonary tuberculosis.

FROM JAMES CROCKET,

M.D., D.P.H., F.R.C.P.E.,

Lecturer on Tuberculosis in the University of Glasgow; Medical Superintendent of the Consumption Sanatoria of Scotland, Bridge of Weir.

The value of X rays in the investigation of intrathoracic conditions is not now a matter for controversy. It is universally recognized. In fact, no chest can be said to be fully examined until the Röntgen rays have been resorted to, and the patient has been screened and a film has been taken. The questions which always have to be decided in each case is what value to attach to: (1) Alterations in the general orientation of the bony framework—particularly unilateral changes. They may point to fibrosis. They may, on the other hand, indicate lessened functional activity. They may be simply the result of a bygone lesion. They may be expressive of recent infiltrative or congestive conditions. Inspection (noting particularly the presence or absence of wasting or spasm) and auscultation (noting chiefly the adventitious sounds after coughing, if any) help in deciding this. (2) The shape, size, and position of the heart. Accurate information regarding this can only be obtained if the radiogram has been taken in the fraction of a second. In tuberculous conditions the shape, size, and position are all altered according to the character of the lesion, the resistance shown by the patient, and the stage of the disease. The various cardiac conditions producing similar changes have to be considered during the investigation, as well as the fact that every debilitating illness has some definite effect on the cardiac structure. (3) Diminished transparency at one or both apices, particularly on screening. It is important to centre the tube well, to cut down the diaphragm, and to

focus the rays directly behind the apices, the one after the other, in judging this point. One must not trust to a general view. The first indication of early tuberculosis, in the writer's opinion, is not mottling or dulness, but a diminished transparency, because of the associated congestion. This often does not show itself on a film or a plate. Careful screening alone brings it out. Its significance is greater if it be associated with lessened movement of the affected area. (4) Apparently enlarged root shadows and mediastinal broadening. Here, again, one must correlate the X-ray findings and the associated physical signs and the symptoms. There is no doubt of two things: (*a*) Large hilar and mediastinal shadows may not be expressive of anything important, but simply the product of environment—dusty atmospheres, city life, etc. —or of previous and perfectly healed disease; (*b*) hilar and mediastinal tuberculosis is the source of much persistent ill-health, and the centre from which tuberculous disease frequently spreads into the lung. In the presence of a definite toxic syndrome, particularly if there be signs of congestion on auscultation, and if those shadows are not sharply outlined, but have heavy margins, such shadows should be looked upon with grave suspicion. (5) The diaphragmatic changes. Limitation of movement is not always to be noted when the disease is present. Usually, as has been pointed out, it depends on whether the phrenic nerve has become involved by the lesion or by pleuritic adhesions, and there be subsequent neuritis. Angling of the diaphragm is always suspicious of an old-standing pleuritic lesion, and obliteration of the costophrenic sinuses is confirmatory evidence of there having been extensive pleuritic changes. In regard to X-ray pictures of the chest, it must be emphasized: (1) They may not show up early lesions; (2) they may not reveal active mischief; (3) they may mislead as to the extent of the gravity of the condition; (4) they always should be large enough to take in every part of the lung area from the extreme apex to the costo-diaphragmatic sinuses. To have the chest X-rayed does not imply that the lungs have been examined. There must be combined with it a careful clinical examination. The radiographer every time should be a clinician. One would go further and say that every clinician specializing in chest diseases should be a skilled radiographer.

FROM H. MARTIN BERRY,

M.D., D.M.R.E.,

Consulting Radiologist, Mount Vernon Hospital for Tuberculosis; Radiologist Freemasons' Hospital; Hospital for Women, Soho Square; Dreadnought Hospital, Greenwich; Hospital for Tropical Diseases; West End Hospital for Nervous Diseases; Hospital for Epilepsy, etc.

"Safety first" is an excellent motto in many departments of life, and amongst them must be counted the diagnosis of tuberculosis.

There can be no doubt that safety is ensured in proportion as the condition is recognized in its early stages, where reasonable hopes of recovery may be entertained. Not only is recovery to be desired by the patient himself and his friends for sentimental reasons, but elimination of a source of infection is important for national reasons. Nor can there be any doubt that early diagnosis is facilitated by radiographic examination; indeed, in some cases it is the sole means by which the condition is recognized. If the infecting agent has been inhaled the primary lesion may well be alveolitis, and in this case clinical examination will elicit characteristic signs earlier than will X rays. But in a large proportion of cases the agent has been ingested and carried to the lungs by the circulating fluids of the body. Here X rays disclose structural changes much earlier than does clinical examination. Space does not permit narration of case histories, but every radiologist has seen advanced pulmonary tuberculosis in patients who had given negative clinical results. It is strange that any method which materially assists in early diagnosis has not been made a routine part of the examination in every suspicious case. Note the word "part." It is not contended that X rays should form an excuse for slovenly clinical work. Interpretation of the radiograms should be entrusted to those who have been trained in the work, for there are pitfalls, and it is not to be expected that a general practitioner, or even a tuberculosis officer, should have a heaven-sent gift which is denied to radiologists. It is perfectly practicable, indeed current practice in some towns, to arrange with hospitals that radiological service shall be available, and it should not pass the wit of man to devise similar schemes in rural districts.

FROM W. CRICHTON FOTHERGILL,

M.B., CH.B., D.M.R.E.,

Senior Assistant Radiologist to the Royal Infirmary, Edinburgh.

In any attempt to assess the value of X rays in the diagnosis of intra-thoracic tuberculosis, one must never lose sight of the fact that radiology is simply an amplification of the clinical method known as inspection. That is to say, a radiological examination is not in itself a complete diagnostic procedure, but should rather form part, and an essential part, of the general clinical examination of every patient believed to be the subject of intra-thoracic disease. A radiogram is simply the shadow-record of the varying densities through which a beam of X rays has passed. It can demonstrate changes in outline or contour, and changes in density, but nothing more. To interpret correctly these appearances in terms of pathology requires much experience and considerable caution. The temptation is always to

read into the radiogram more than is justifiable. Thus, while an X-ray examination may give much information as to the extent of an intrathoracic pathological process, it will not necessarily demonstrate the particular ætiological factor which is at work. Therefore, the radiological evidence must be carefully co-related with the other clinical findings before a diagnosis is made. Having stated the limitations of radiology, we must consider its possibilities. It gives accurate information as to the position and extent of the lesion, information which is often more accurate than can be obtained by any other means. In many cases a radiological examination will demonstrate the existence of an early tuberculous process which has not yet produced any definite physical signs, though symptoms are present. It is valuable in the diagnosis of small pleural effusions and in the detection of pneumothorax. Again, in the differential diagnosis between tuberculous and neoplastic conditions it is of great value. Mention may be made of its importance in the control of artificial pneumothorax. It is my opinion that no clinical examination of a tuberculous suspect which does not include a radiological examination can be regarded as complete. I should like to plead for closer co-operation between clinician and radiologist than is at present the rule.

FROM W. H. DICKINSON,

O.B.E., M.D., M.R.C.P.E., D.P.H.,

Tuberculosis Physician City and County of Newcastle-on-Tyne; now Radiologist to the Northern Counties Hospital for Diseases of the Chest; Author of "A Survey of Sanatorium Benefit," etc.

Pathology is the basis of clinical medicine, and the investigation of "chest cases" with the Roentgen rays has revolutionized our conceptions of the pathology of pulmonary tuberculosis. In conjunction with the classical methods of examination, we are able to get a much more definite picture of the disease, both qualitatively and quantitatively, for radiological examination reveals many of the secrets, during life, which otherwise could only be discovered post mortem. In diagnosis, the X rays are indispensable; they enable one to come to a definite decision in the numerous difficult cases which present symptoms suggestive of tuberculosis of the lungs, but only indefinite or negative physical signs. The nature and extent of the lesions give valuable guidance with regard to treatment, notably artificial pneumothorax; repeated examinations at suitable intervals show whether the disease is progressing favourably or unfavourably, and thus enable the physician to estimate, more accurately than he otherwise could, the prospects of arrest or complete recovery. Just twenty-six years ago at the British Congress on Tuberculosis, Dr. Espina y Capo, a Spanish delegate, said:

"To-day it is already impossible to do without this potent means, adopted in all countries and by all practitioners." In this country, it is only in quite recent years that the indisputable value of radiological examination in the investigation of patients suffering from, or suspected to be suffering from, tuberculosis of the lungs or pleura has come to be generally appreciated, but the day is at hand when every physician specializing in diseases of the chest must include an X-ray plant as part of his equipment.

FROM R. R. TRAIL,
M.C., M.A., M.D.,
Medical Superintendent, King Edward VII. Sanatorium, Midhurst.

Radiography of the chest has established itself as one of the most important adjuncts in the diagnosis and treatment of intrathoracic tuberculosis. Its use in diagnosis has frequently been underestimated owing to the erroneous belief that its function lies in presenting old and established fibrotic disease, and overestimated in claiming its usefulness in diagnosing the much-discussed subject of hilum disease. Post-mortem findings have shown its limitations in the latter condition; everyday experience proves that no properly taken film fails to show more than expert physical examination—*e.g.*, what appears from physical signs to be a purely apical lesion will frequently prove to be infiltration of the upper third of the lung. It follows that all doubtful cases—the cases with symptoms rather than signs, the no-sputum, sputum-negative, and suspicious laryngeal cases—ought to have the aid of a film before one can be satisfied that the diagnosis is fully considered and competent. Prognosis in pulmonary tuberculosis may be materially aided by an examination of the position, size, and opacity of the heart shadow; it seems that the translucent, pendulum-like, centrally-placed heart goes with poor prognosis. The position of the mediastinum is also of importance. The greatest use in treatment, however, is in connection with the induction and continuance of artificial pneumothorax. The taking of a film should, where possible, precede all decisions on its induction; and repeated screening certainly aids the efficient conduct of the case, showing, *e.g.*, any displacement of heart and mediastinum, the presence and true importance of adhesions, and the danger of re-expansion.

FROM H. E. WATSON,

M.B., CH.B.,

Medical Superintendent of the South Wales Sanatorium, Talgarth, Breconshire; of the King Edward VII. Welsh National Memorial Association for the Prevention, Treatment, and Abolition of Tuberculosis.

Radiology in relation to intra-thoracic tuberculosis may be considered under the following headings: (1) *Technique:* So far this has not been sufficiently standardized. A high degree of technique is essential if the greatest value is to be obtained from the method, and such points as distance from cathode, which should be not less than 30 inches, centring of the tube, etc., require special attention. Careful screening is advisable in every case, and where cost is of importance, as in public institutions and dispensaries, this will in some cases obviate the need of radiography. (2) *Diagnosis:* While X rays are of undoubted value and make for accuracy in diagnosis, in the doubtful case the aid obtained is often inconclusive. Films taken in different positions and repeat examinations may in these cases be advisable. Amongst conditions which may simulate tuberculosis may be mentioned anthracosis, silicosis, the fibrosis of syphilis, and bronchiectasis. In the last named the recent introduction of lipiodol is a considerable advance. Hilar shadows in children still provide ground for debate, and without substantial clinical evidence do not justify a diagnosis of tuberculosis. (3) *Treatment:* In established disease radiography has its greatest value in demonstrating extent of the lesion and suitability for special forms of treatment—*e.g.*, pneumothorax, thoracoplasty, etc. —and also as a guide during the continuance particularly of pneumothorax treatment. In conclusion, it is of the first importance that the clinician should be experienced in the radiological appearances of both normal and disease conditions of the chest. Further work in co-relating the results of radiology with clinical and post-mortem findings is highly necessary. Although X-ray methods are of undoubted value, their employment should be supplementary to, and not imply any neglect of, the older and well-established clinical methods.

ORIGINAL ARTICLES.

X RAYS IN A SANATORIUM.

By J. E. A. LYNHAM,
M.D., M.R.C.P., D.M.R.E.,
Radiologist, Mount Vernon Hospital for Tuberculosis.

An institution devoted to the care of persons suffering from pulmonary tuberculosis cannot be regarded as complete in its equipment unless adequate facilities are provided for radiological examination. The value of X rays is now generally admitted in diagnosis and as a means of recording progressive changes in the lungs. The fluoroscopic screen is essential for the control of artificial pneumothorax, and in the more difficult surgical procedure of dividing pleural adhesions. Radiographs are required to assist in estimating the sequel to thoracoplasty or phrenic avulsion. And it is obvious that in relation to a disease capable of widely spread general or local infection, special investigation of any part of the body, and particularly of the renal and intestinal tracts, may have to be undertaken from time to time.

The evolution of radiology has been rapid, for it is less than thirty-two years since the first radiograph was taken, and it is to be feared that there still exist on public bodies some who regard X rays as new-fangled, and remain uninformed of the very important place occupied by this method of clinical investigation. The problems and dangers which proved such obstacles to the pioneer workers are now largely understood, and with the aid of modern apparatus useful negatives can be obtained with comparative ease and certainty. Unfortunately, good apparatus is expensive, and the cost of upkeep is considerable if efficiency is to be secured. Hospital committees do not always welcome innovations, particularly when expenditure has to be considered; and there are in existence institutions where the radiological department is inadequate, its apparatus insufficient, and its working thrown without skilled assistance as an additional burden on a harassed medical superintendent.

It may therefore be of interest to consider briefly what might be regarded as a minimum for efficiency in X-ray work in a sanatorium. It is not necessary to think in terms of the magnificent departments which have been evolved in some of the larger hospitals, but if the radiological work in an institution is to render its full service it must be freed from the difficulties which restricted its use in bygone years,

and be carried out by a trained worker in suitable accommodation with effective apparatus, so that the screening of a chest and the taking of a film shall become as much a part of the clinical examination as the use of a stethoscope.

The X-ray room should be large and airy, measuring something like 20 by 30 feet, so that the various parts of the apparatus are clear of the walls and ample space is left between for ambulance trolleys. Heating, ventilation, and lighting are important considerations, and thoroughly effective and easily worked blinds are required to darken the room for screening. The door should be arranged so that a bright light will not enter the room as patients pass in and out. The bulk of modern opinion favours the transformer machine with a movable control table and fine focus Coolidge tubes, but many workers use other tubes for special purposes. Some prefer an induction coil with a mechanical rectifier; but in either case the important thing to ascertain is that the output is sufficient for fast work. It should be possible to get a good chest film of an adult at 32 inches, with an exposure of $\frac{1}{10}$ of a second; and for heart films a single flash exposure should be possible. The type of apparatus which will perform this class of work is not cheap, but it is infinitely better to secure good apparatus than to try to tolerate indifferent results.

The table should be provided with a tube both above for ordinary working, and below for screening in association with operative procedures. The upright screening stand should be placed away from the tables; the fluorescent screen should be of the best possible construction; the movements of the screen, and particularly of the diaphragms, should be smooth and easy. As the upright screen is in frequent use, it is sometimes thought well to have it in a darkened compartment partitioned off from the rest of the room.

A second table constructed with a Potter-Bucky diaphragm should also be supplied. A portable diaphragm costs less, but it is more troublesome and lacks the accurate centring of the properly constructed table. Each of the tubes should be properly encased in material impervious to the rays, except in the direction where the beam is required. The high-tension leads are fixed out of reach overhead, so that the tube in use at the moment can be readily connected up by spring leads. The wall space can be utilized by cupboards for storing spare tubes, accessory apparatus, negatives, etc. A filter of at least 1 inch of aluminium should be permanently fixed in the path of the rays from the tubes used for screening. If treatment is contemplated it is advisable to have a separate induction coil installation in a separate room, with a tube and tube stand, and a comfortable couch for the patient to recline upon.

A waiting-room, suitably warmed, should be provided for the

patients. Too often they are asked to sit in a draughty corridor. A number of small cubicles or dressing-rooms just off the X-ray room will save a great deal of time, and adjacent lavatory accommodation is advisable.

At least two 12 by 15-inch cassettes are necessary, each with its pair of intensifying screens, and one cassette for each of the smaller sizes selected. The intensifying screens should be of good quality, washable, and without grain. With care they will last two years or more. Cardboard folders are sufficient and easier to use when the film is to be placed under the patient. The introduction of films to replace glass plates has rendered storing a simple matter. Each film should be marked with the patient's name, the date, and the serial number, and should be placed in an envelope similarly marked. A properly kept card index will prove of great service when old films have to be turned up for reference. The film envelopes can be stored upright in a cupboard, or kept in a filing cabinet.

The dark room should contain a wide, deep bench, for use when filling the cassettes, with a large drawer for the intensifying screens, and a cupboard below arranged with vertical compartments for the cassettes not in use. Below the bench should be another large drawer, lead lined and light tight, for the unexposed films. If quantities of films have to be stored, a lead-lined cabinet should be provided. All this should be placed well away from the developing and washing tanks. Hot and cold water should come from taps high above the tanks and led down through rubber tubes. The developing tank is placed standing in a larger tank, so that its temperature can be controlled by that of the surrounding water. The washing tank should be large. A dull red or non-actinic green light should be placed above the developing tank so that a film may be examined during development without injury. Racks should be provided for the film-holders and for drying the films, and an electric stove helps to hasten the drying.

Finally, there should be a photographic room with facilities for making prints, enlargements, reductions, and lantern slides. This part of the work is essential if it is hoped from the administration of the institution to contribute to the science of medicine. It should be made easy for the physician in charge of a case to obtain illustrations or lantern slides for use at medical societies and conferences.

The staff required to run such a department need not be large. Where possible it is of course desirable to have a radiologist on the staff who will attend from time to time and report on the examinations. A trained radiographer is essential, and there should be a nurse in addition. The radiographer is responsible for the care of the apparatus, for taking and developing the films, for the marking and storing and indexing. All this takes time, and it is seldom satisfactory to ask the

radiographer to do anything outside the department. The nurse is to assist in preparing and arranging the patients. If the work is considerable it may be necessary to have a laboratory attendant to carry out the photographic work, but where time permits the radiographer can usually do this. The firm who supplies the apparatus should be asked to send someone down to inspect it at stated intervals.

Such an organization should give thoroughly satisfactory results. Where a committee seem unwilling to make the necessary provision it is often because they do not understand. If they can be made to appreciate the services that can be rendered by efficient radiography they will endeavour to provide for it.

LIPIODOL INJECTIONS.

By F. G. CHANDLER,

M.A., M.D. (CANTAB.), F.R C.P. (LOND.),

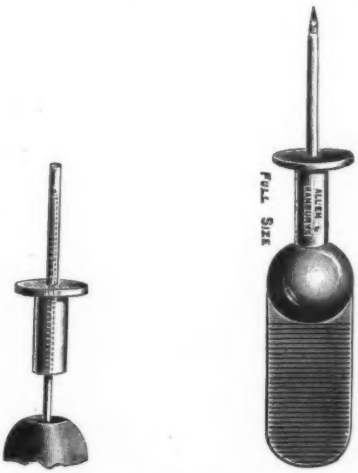
Physician with charge of Out-Patients, Charing Cross Hospital; Physican, City of London Hospital for Diseases of the Heart and Lungs, Victoria Park, E.

In the use of Lipiodol we have one of the greatest advances in thoracic diagnosis of recent times. It enables us to diagnose and to localize bronchiectatic dilatations with a degree of accuracy that has hitherto been impossible. The early symptoms and signs of this disease—cough, expectoration, hæmoptysis, fever, wasting, areas of impaired resonance, and constant râles—are all equally typical of pulmonary tuberculosis. Absence of tubercle bacilli in the sputum and fæces would make us suspect, but would not prove, the existence of bronchiectasis. It is but little help to say that tuberculosis is more commonly apical and bronchiectasis more commonly basal, for exceptions are common. Lipiodol will settle the diagnosis. It will not help in the diagnosis of early pulmonary tuberculosis, for, as might be expected, no characteristic picture is given, but it will probably give evidence of bronchiectasis at a stage where without this aid a dogmatic diagnosis would be impossible, and where many of the symptoms and physical signs are those of tuberculosis.

As an example, a muscular, strong young man was admitted to Victoria Park Chest Hospital under my care. He had attended the out-patient department under the care of Dr. W. B. Wood, complaining of coughing up purulent phlegm. There were constant râles over the left base. In two or three weeks all the symptoms and signs disappeared. He felt and looked very well. Lipiodol injection showed a perfectly definite enlargement of the bronchi running down towards the

left base, their ends being bulbous. Here, then, was bronchiectasis at its inception: knowledge of infinite importance, for, though one did not feel justified in adopting any immediate special treatment, one was able to advise concerning the general conduct of his life. One was in a position to appreciate and understand any recurrence of symptoms, and in the event of evidence of progressive disease one would know that some special measure designed to relieve the bronchi of traction would be necessary.

Again, Lipiodol will enable us to differentiate between bronchiectasis and chronic lung abscess—conditions which have in common such signs and symptoms as clubbing of the fingers, and the expectoration of large



TROCAR AND CANNULA FOR INJECTION OF LIPIODOL.

quantities of purulent, and sometimes fetid, phlegm; a differentiation which is essential to the proper treatment of the patient. It will outline and localize tuberculous cavities, and thus help to distinguish between a cavity, a pleural ring, and a localized pneumothorax. It appears to be absolutely harmless where there is no idiosyncrasy—in fact, in some cases, it seems to do good. In two recent cases of lung abscess all the symptoms and physical signs disappeared after the injection of Lipiodol. Whether after it, or because of it, I cannot be certain, because lung abscesses may heal spontaneously. Nevertheless, the effect was produced so soon after the injection that I had reason to think that the recovery might have been helped by it.

In making the injection the following points must be observed. A few days beforehand test for idiosyncrasy towards the substances to be

employed, by giving a hypodermic injection of morphia gr. $\frac{1}{8}$, cocaine gr. $\frac{1}{8}$, and pot. iod. grs. 15, three times a day, by mouth, for one day. Before the injection warn the patient that the second stage—namely, the injection of cocaine into the trachea—is very unpleasant, but that the discomfort will pass off in a few seconds and will not be more than he can easily bear.

The following is the necessary apparatus: Morphia in solution gr. $\frac{1}{8}$; 2 per cent. novocaine; 5 per cent. cocaine; hypodermic syringe with fine needle for the novocaine and a stouter needle for the cocaine; ether for cleansing the skin; the author's special trocar and cannula (as illustrated) sterilized and served up dry, or other forms of cannula or needle; the Lipiodol, in its original tin, placed in a bowl of hot water to keep it at 100° F. (do not let water get into Lipiodol); a 20 c.c. record syringe, sterilized and served up dry; a small piece of fine bore thick rubber tubing, one inch in length, to affix to the end of the syringe, to make more easy the drawing up of the Lipiodol into the syringe from the container.

The procedure is as follows: The patient lies with shoulders raised and head well back. A sixth of a grain of morphia is given subcutaneously if there is nervousness. The crico-thyroid region is cleansed with ether (not iodine). A bleb of 2 per cent. novocaine is made in the superficial layers of the skin over the crico-thyroid membrane exactly in the mid-line. The stouter needle is then fixed on the syringe and 0·5 c.c. of 5 per cent. cocaine is taken into the syringe. The needle is inserted through the crico-thyroid membrane—air is withdrawn to make sure of being in the larynx—and the cocaine gently injected. If the patient starts to cough or to move, quickly inject the remainder and withdraw the needle. Wait for a few minutes, then insert the trocar and cannula. The 20 c.c. syringe filled with Lipiodol is now attached to the cannula—no pressure is needed; it engages with the utmost ease. Inject the oil slowly, withdrawing the piston occasionally to be sure that the cannula is still in the trachea by reason of a large bubble of air appearing. The patient must be turned towards the right or the left, according to the side it is desired to inject. The patient should not eat for an hour or two after the injection.

OCCUPATIONAL THERAPY: AN ADJUNCT IN THE TREATMENT OF TUBERCULOSIS.[1]

By J. B. McDOUGALL,

M.D., M.R.C.P.,

Late Medical Superintendent, Wooley Sanatorium, near Hexham, Northumberland; Medical Director, British Legion Village, Preston Hall, Kent.

1. Occupation.

The term 'occupational therapy" is one of the more recent additions to the already overburdened list of so-called "treatments" for tuberculosis. It has, however, one distinguishing feature which differentiates it from most other forms of treatment in tuberculosis—it is fast becoming more popular, not only in this country, but abroad.

Patients suffering from pulmonary tuberculosis are capable of being divided into three great classes. I do not mean those which are clinically recognized as Stages I., II. and III. respectively, but cases which, as regards their economic future, have: (*a*) A good chance of rehabilitating themselves; (*b*) a fair chance of rehabilitating themselves; or (*c*) a bad chance of rehabilitating themselves. In other words, there is a growing and, I believe, a correct tendency to view the prognosis in a case of pulmonary tuberculosis more in the light of economic factors than of physical signs. After all, the real criterion of treatment in pulmonary tuberculosis relates to the restoration of the patient to a full working capacity, so that he may be able to take his place once more as a wage-earner in open competition with his fellows.

For many years the advice given to the man broken down with tuberculosis has been to find a light job in the open air, and that advice, given no doubt by hundreds of doctors the world over, is, without doubt, the most valuable and the most scientifically sound for most consumptives, if only it were practicable. But it is not. The patient often finds himself totally unsuited for such work, even if it could be found. And if he were fortunate enough to discover a suitable outdoor occupation, he does not always happen to suit his employer, who, quite rightly, demands a fair return in work done for his expenditure in wages. The mere fact, however, that the simple and theoretically sound advice has been dispensed so frequently by members of our profession, and, indeed, since the time of the "Father of Medicine" himself, is proof of the fact that it is advice which should be put into practice wherever possible. If we were in a position to guarantee the patient a light job in the open air under medical supervision, then

[1] Substance of an address delivered to British Medical Association Meeting, Newcastle, November 18, 1926.

I take it that the conditions are as ideal as it is possible for them to be. As a matter of fact, there is still something lacking, for the lightest job in the world, under the most ideal hygienic conditions and under the most skilled medical supervision, will not solve the economic problem for the average "middle" case of consumption. If it did, the whole problem of treatment would be solved; but the scheme breaks down even then, so far as the real economic future of the patient is concerned, for unless he is in receipt of a reasonable wage for the work he does, he can never be regarded as an independent economic unit.

This train of thought has been mainly responsible for the introduction of occupational therapy into sanatoria in this country as an adjunct in the treatment of tuberculous disease. But there is another viewpoint which, so far as I personally am concerned, has weighed with me just as much as the other. It is this, and it is the outcome of experience in sanatoria as an assistant, and later as an officer whose duty it has been to visit many sanatoria throughout one of the largest counties in England (the West Riding of Yorkshire). During visits to these institutions and elsewhere, one could not help but agree with the criticism of sanatoria which has been made by the Medical Officer of Health of one of the largest cities in the North of England. He said: "Many of our modern sanatoria might be named 'The Lounger's Paradise,' where men eat and sleep, drink and smoke, and then, when they can muster sufficient energy, play a game of cards."[1]

In former days it used to be said that patients who were put on graduated exercise—which is not quite the same as occupational therapy, but which, as we know, aims at catering for the physiological and pathological requirements of the individual by inducing that blessed phenomenon known as a tuberculous auto-inoculation—were generally much happier and enjoyed their treatment more than those who were not allowed, for one reason or another, to wheel barrows and the like. But it only required a detailed analysis of the psychological atmosphere of certain sanatoria to show that the great majority of patients in them were completely out of touch with the aims and objects of treatment. In some, the invariable question which one patient put to another was, "How long are you in for?" and the inevitable reply, often accompanied by a yawn, was "Three months."

About two years ago I selected the figures from ten different institutions which treated males suffering from pulmonary tuberculosis, and found that the average duration of stay for all cases definitely diagnosed as pulmonary tuberculosis was ninety-four days. Now, it has frequently been said that sanatorium treatment is primarily a means of education for the patient, and if I could believe that the

[1] See address by Dr. J. Johnston Jarvis at the Thirty-fifth Congress of the Royal Sanitary Institute, Liverpool.

fountain of knowledge had been enriched in all these cases in the statistics referred to above, I would be prepared to admit the value of ninety-four days in a sanatorium to any patient; but frankly and candidly, I have experienced the feeling that in far too many sanatoria the atmosphere is not conducive to a more prolonged stay, and that treatment is regarded much too frequently as something in the nature of an ordeal, with an unwilling patient as the tool of the local authority. One does not require to be reminded of the ordeal which sanatorium treatment can be to a person who has for many years lived a circumscribed life in an industrial centre. For patients who are ambulant I can imagine nothing more demoralizing than a series of three or four different walks, each with its prescribed linear measurement to meet the necessities of the case, and each to be undertaken every day in the week for twelve or fourteen weeks on end. Such a form of repetition work, for repetition work it is, can only lead in time to dissatisfaction with the treatment and an unwillingness on the part of the patient to continue treatment in the open air under medical supervision.

2. Treatment and Training.

Such considerations as I have expressed have prompted some of us to approve what has been called occupational therapy in certain sanatoria in this country. The fundamental idea behind occupational therapy is to encourage the patient during his treatment to live in an environment which is, as nearly as may be, that of a healthy community, and not merely a health-preaching institution. It is true there are, or should be, simple lectures given to the patients as well as to staff, but the real aim is to practise health without preaching it. The patient is asked to utilize his capital, and in the working classes, with whom one has to deal almost entirely, the only capital which they possess is the knowledge they may have of their trades. It is not, of course, possible, even if it were desirable, to arrange for the patient who is, say, a caulker in a shipyard to indulge in his own particular means of livelihood, but it is possible, by more or less skilful arrangement, to provide small and sometimes very unpretentious occupations into which a caulker, a shipwright, a coal-miner, or a clerk may find himself at home, as it were. The aim is not so much to force a patient into a particular occupation—which should never be attempted—as to allow him, with the consent and advice of the Medical Superintendent, to select his own fancy. The ideal way, therefore, is to have several recognized pursuits for the majority of patients, always bearing in mind the type of patient usually admitted to the sanatorium, and the natural resources of the district in which the institution is situated. It is for these reasons that no particular occupation can be specially recommended. The committee of the

Joint Tuberculosis Council found that there were no fewer than fifty-one different occupations being taught at sanatoria in this country. And here in the word "taught" one has hit upon one of the great advantages of occupational therapy. Although a certain number of patients may be fully acquainted with a particular occupation which is in progress, the majority are new to the various little industries which are being pursued. To them there is the unique fascination that they are, sometimes quite late in life, learning something new or additional. They are not asked to compete in the ordinary industrial sense with their brother or sister patients. They see their progress day by day, they realize that the task is leading to something, and that when it is finished something definite has been accomplished. It is the joy of the thing which makes work worth while, and not the compulsion. The consumptive is just as human as the rest of us. He likes to feel that if he has to make a sacrifice of several months of his life, he is not going to become a parasitic invalid. And if we can prevent him from becoming so, should we not at least make an effort to encourage him in his ideal? If we can, by so doing, further encourage him to prolong his period of treatment, are we not fulfilling the very advice which has been handed down to consumptives by medical men throughout the ages—namely, giving him a light job in the open air? Open air does not mean agricultural pursuits, which are, almost without exception, too laborious for most tuberculous cases.

3. Colonization.

In this country to-day there are several places where occupational therapy as described has been given a very fair trial. It has been tested at Papworth in Cambridgeshire, at Preston Hall in Kent, at Wooley in Northumberland, at Nayland in Suffolk, at Barrowmore Hall in Cheshire, and elsewhere. In every single instance it has proved an unqualified success. In the case of Papworth, Preston Hall, and to a lesser degree at Wooley, there have emerged results which were originally quite undreamt of. At these places it has been found that by arranging definite occupations for patients on community lines such as I have already indicated it is possible not only to keep patients during their period of treatment in the open air for a longer time than in the old days, but it is actually possible to conduct the occupations so that a certain number of these patients may be enabled to go on living under open-air conditions and under medical supervision, and at the same time earn a reasonable wage for so doing. Competition in the open market can be undertaken and profits made, and all profits are utilized to pay wages to a certain number of ex-patients who prove themselves sufficiently apt to merit inclusion in what has now come to be known as the settlement. I would, however, insist that a settle-

ment, as such, is merely an offshoot, an outcome, a development—call it what one will—of occupational therapy conducted upon common-sense lines. Although I know the history and a fair amount of the details of the now famous Papworth experiment, I feel I cannot do justice to the wonderful pioneer work which has been conducted there by Dr. Varrier-Jones. A veritable village—not the first in the world, for Saranac Lake in America still claims priority—has been built up round what was originally an experiment in occupational therapy. About Preston Hall I hope to be able to report further at an early date, although here I feel that a grave error was made originally when the place was opened with the preconceived idea that it was to become a settlement. That I am sure is wrong. There can never be a settlement as such without the initial spadework so essential for the successful running of a good sound scheme of occupational therapy. The great objection to the Papworth and Preston Hall experiments is that they have been expensive, and that they are not models which local authorities or the Ministry of Health could advise as worthy of general adoption.

4. Finance.

On the question of the pure economics of the situation I do not propose to enter here. It is much too complicated. But that settlements need not be expensive is surely proved by the experience which we have had at Wooley. Very briefly, the finance of the scheme at Wooley is this: In a period of three years a sum of just less than £3,000 has been subscribed by voluntary donations, mostly by ex-patients, directly and indirectly. There are to-day some seven different departments in operation for occupational therapy, and from the profits from these departments we have been able, from the beginning of the work, to pay to the County Council a sum of well over £1,000 in lieu of maintenance, and a sum of about £1,000 in wages to some sixteen or seventeen ex-patients who have proved themselves in every respect worthy of becoming settlers. Had the scope of our activities been greater, the number could have been multiplied in proportion; but I merely quote the Wooley experiment to show that occupational therapy and settlement schemes need not necessarily be expensive to run. Although the financial aspects of settlements in general and of occupational therapy schemes for the treatment of pulmonary tuberculosis must be considered and criticized from the financial point of view, yet, as was pointed out in the Report of the Employment Committee of the Joint Tuberculosis Council, this must not be allowed to obscure the very important part taken by such schemes in another direction. The fact that they take in the infectious or potentially infectious individual from the large

mass of population and that they endeavour to determine the maximum productive capacity of such individuals are important points. It is equally true that if work is available, patients or colonists are free from anxiety, and the elements of uncertainty and competition cease to harass them. They are, therefore, greater economic assets to the State than they would be under any conditions of everyday work and life. Furthermore, the community benefits by the removal of cases of infection from its midst. The present alternative is sanatorium treatment at frequent intervals as a result of many breakdowns which occur.

5. Essential Principles.

In the Joint Tuberculosis Report already referred to it is noted that on the purely medical side the results have been good. If, under such conditions, results are not good, it is difficult to conceive of sanatorium treatment of ninety-four days' duration being of the slightest value. In point of fact, it rarely is from the curative point of view. It is also mentioned in the same report that treatment of this kind is not just the kind of treatment that anyone, even one who is interested in tuberculosis, can accomplish any more than just any qualified practitioner can be expected to undertake one of the major operations in surgery. A special "technique" is necessary, and a good deal of apprenticeship. It is, nevertheless, work which has shown itself to be something more than a mere useful adjunct to the treatment of pulmonary tuberculosis. It has been said that a business experience and personal ability are necessary to enable a doctor to administer occupational therapy and settlement work successfully. If by business experience and ability one means tact in handling men and women in various occupations, and in putting square pegs into square holes instead of into round holes, and in keeping a careful watch on details of each and every patient's activity, then I agree most heartily that these things are essential; but I do not share for one moment the view that a special business experience outside the medical world is even desirable. Occupational therapy is a form of treatment; it is not a business. If successful occupational therapy results in a more or less successful business concern in which the profits of the undertaking are given to ex-patients to enable them to continue to live at an economic rate under sheltered industrial conditions, then well and good; but such a result must only be achieved here and there, and it is not, as a matter of fact, essential, although it is very desirable. What is required, however, is a thorough grasp of the principles underlying occupational therapy, and in this respect occupational therapy differs in no way from any other form of treatment for tuberculosis or any other disease. The physician, for example, who

attempts to induce a partial collapse in a diseased lung must necessarily be familiar with the physics of the normal chest, and more particularly must be aware of the possible difficulties which may prevent his attaining a satisfactory result. Likewise the surgeon, in his attempt to enter a difficult anatomical zone, would find his knowledge of surgery of little use to him were he deprived of his anatomical instinct. And so in occupational therapy there are principles to be observed before there can be the slightest chance of it becoming a weapon of real value in the actual treatment of the disease.

But one may ask, Is not the cure of tuberculosis wrapped up in rest? I have heard a medical man who suffered from pulmonary tuberculosis say that rest is the only treatment for pulmonary tuberculosis, and in the next breath state that he himself was the Medical Superintendent of a sanatorium. The two things, to my way of thinking, are entirely incompatible. If he had said the best form of occupational therapy for a consumptive doctor was for him to become a sanatorium superintendent, he would not only have been stating the truth, but he would have been—as he, in fact, was—making out a very good case for occupational therapy on his own admission. Are we not taught that it is dangerous for the consumptive to over-play, to over-work, and to burn the candle at both ends? Rest is, as somebody has put it, the foster-nurse of Nature's repose.

All our teaching in the past has been to the effect that expenditure of energy is dangerous for the consumptive, and that his life should be one long-drawn-out solemn period of physical self-denial. Have we not been concentrating too much on the lung tissue, and forgetting the owner of it? Have we not been too much in the habit of forgetting that the chronic consumptive has his bread and butter to earn, and that he cannot afford, on purely economic grounds, to be held up as a perpetual offering on the altar of medical theorizing? For the consumptive suffering from active disease rest is the only treatment, but the pathologists tell us that there is a considerable band of consumptives who may be cured even whilst they work. In every sanatorium in this and other countries there are patients who, instead of taking the prescribed walk of two to four miles day after day, could transfer the same amount of physical energy into constructive work which would bore them less and mend them more. The middle-stage consumptive who lays aside his permanent occupation very rarely does so with the thought that he will never work again. He is an optimistic person at heart, and yearns for something to do, especially when he realizes that his future depends on his hands and his brains, and not upon the flexion and extension of his legs in aimless country rambles. Nothing will give a man more self-respect and confidence than the feeling that his medical adviser can trust him to do something purposeful even whilst

he is an invalid. There is a keen desire the world over to help the sick, but we are sometimes apt to forget that in the case of a chronic invalid, such as the average middle-stage case of consumption is, the best way of helping him is to give him an opportunity of helping himself. The consumptive may never be a fit man; he has his limitations; but progressive treatment should, I believe, be such as will enable him to occupy himself in a constructive fashion within his limitations. It is here that medical direction is so essential. If we are to test a person's "maximum productive capacity," we must do it according to some productive plan, so that we may be the better able to guide each patient in the way he should go.

A VISIT TO VEJLEFJORD SANATORIUM.[1]

By F. W. GODBEY,
M.D., D.P.H. (Dubl.).

The student of tuberculosis who visits Vejlefjord will be struck at once by the ideal situation of the sanatorium. The surrounding woods contain many beautiful views, and the paths are laid out so as to meet the requirements of the patient who is the subject of pulmonary tuberculosis. It is interesting to note that the paths are named after various famous phthisiologists, such as Bodington, Williams, Forlanini, Laennec, Brehmer, Dettweiler, Walther, Saugman, etc. Every patient receives a booklet in which the walks are described. These walks are divided into eight classes, and the patient is allowed to choose his own walk, within the limits of the class prescribed for him. Such a plan saves much time for the physicians, who at Vejlefjord are much occupied in treating advanced cases, which form 65 per cent. of all patients in residence.

Special methods of treatment, administered according to the individual peculiarities of each case, form special features, and include artificial pneumothorax, cauterization of adhesions (Jacobaeus), pleural irrigation for empyema, thoracoplasty, radical phrenicotomy, light treatment, sanocrysin administration, etc. Artificial pneumothorax has been carried out at Vejlefjord since 1906, and number nearly 800 cases. In those instances where a complete collapse has been possible, a permanently good result has been obtained in no less than 70 per cent. of the patients dealt with.

[1] This article has been submitted to Dr. Gravesen, the Medical Superintendent of the Vejlefjord Sanatorium.

VEJLEFJORD SANATORIUM, DENMARK.

It is a great advantage that all forms of treatment considered necessary for the patient can be carried out at the sanatorium. Dr. Gravesen, the Medical Superintendent, supervises all measures himself, and conducts his own X ray work, which is of a very high standard. When a thoracoplasty is considered necessary, it inspires confidence in the patient to know that his physician is also an expert surgeon in this particular field of thoracic surgery.

When a thoracoplasty has to be performed, a decision is first made as to how much of each rib has to be removed in order that the chest may fall into the shape necessary to secure collapse of the cavities ascertained to be present. Often a complete collapse is not necessary, and as a partial collapse causes much less general disturbance and can be accomplished in one stage, the advantages to the patient are obvious. Complete surgical rest for the tuberculous lung, which is difficult to obtain with thoracoplasty, is not the only aim of the operation. The stasis of the pulmonary circulation, with consequent exudation of lymph, is probably a factor of great importance in procuring healing. In a lung which already shows signs of retraction, but in which efficient retraction is prevented by the resistant chest wall, the removal of small portions of several ribs may be all that is necessary to obtain a good result. In cases with large cavities a more radical or combined operation is sometimes necessary. The operation causes very little or no shock in most cases. Where shock is anticipated, the operation is carried out in two stages. It is interesting to note that women are less liable to shock than men. Local anæsthesia together with the production of light ether anæsthesia (not enough to abolish conjunctival reflex) are used. Stimulation by means of hypodermic injections of camphor, digitalin, and caffein is employed before and after the operation. The mortality is now about 7 per cent.

The good results of thoracoplasty are so obvious to patients at Vejlefjord, who see apparently hopeless cases recover, that when operation is considered advisable very few refuse this treatment. Of 107 thoracoplasty cases, all third stage with tubercle bacilli in the sputum, discharged up to March 1, 1924, 44, or 41 per cent., were fit for work on March 1, 1926, two to nine years after their discharge. This compares favourably with the results of ordinary sanatorium treatment in the same type of case. Of 612 cases of this type discharged from 1901 to 1907, 179, or 29 per cent., were fit for work two to nine years after discharge. When it is remembered that the amount of cavitation and pleural involvement is usually great in thoracoplasty cases, the results are really better than appears from the above statistics.

At Vejlefjord there is a well-equipped light department for the treatment of surgical and laryngeal tuberculosis. It contains twelve

carbon arc lamps (20 amp.), six mercury vapour lamps, and one Finsen-Reyn lamp (for lupus), etc. In treating laryngeal tuberculosis, most attention is usually paid to the accompanying pulmonary lesion. A combination of collapse and light treatment has given good results. In thirty-nine cases treated in this manner between 1916 and 1926, healing of the laryngeal lesion was obtained in twenty cases, and improvement in eight. Local treatment was not used in these cases. When local

VEJLEFJORD SANATORIUM, DENMARK: THE LIGHT HALL.

treatment is indicated, this is given at regular visits of the laryngologist, who comes from Finsen Institute (Dr. Strandberg).

Very striking results have been obtained with sanocrysin, particularly in exudative cases. Sanocrysin has also proved a valuable help in cases where collapse treatment alone was impracticable because of an exudative focus in the less affected lung; sometimes a combination of both treatments has been used effectively.

Serious hæmoptysis is treated by the intravenous injection of calcium chloride in 5, 10, or 15 per cent. solution; 1 to 3 grms. are given at once, and the injection is administered slowly. As much as

9 grms. has been given in twenty-four hours, but 3 grms. or less are usually sufficient to arrest hæmoptysis.

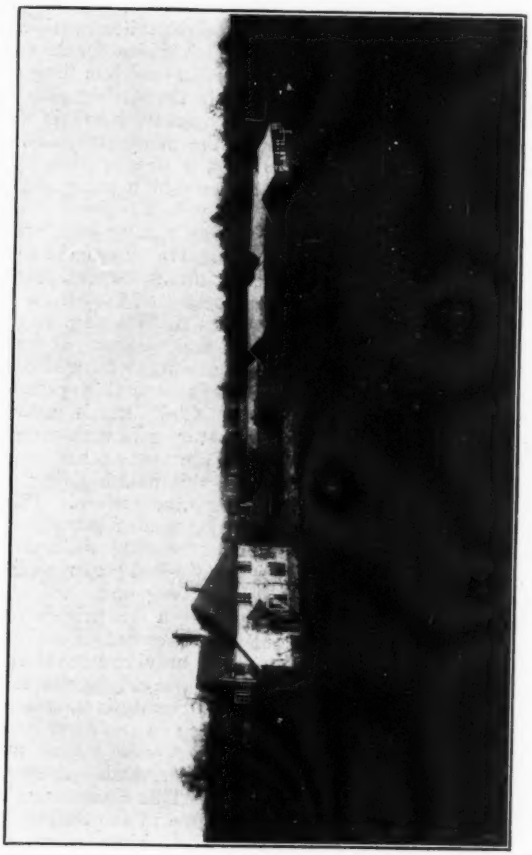
There are many other interesting things which make a medical adviser's visit to Vejlefjord a very useful experience, but space does not permit me to enlarge upon them in this necessarily condensed article. My general impression is that Vejlefjord offers its patients all that is best and soundest in the modern therapy of tuberculosis.

ASSOCIATIONS AND INSTITUTIONS.

SELBRIGG SANATORIUM, HOLT, NORFOLK.

On the wooded plateau above Sheringham, eight miles south-west of Cromer, with its gravel subsoil, is a region which is ideal for the conduct of a successful warfare against tuberculosis. No less than three public and one private sanatoria are to be found amid the Kelling pine woods near Holt. Holt in Anglo-Saxon means a grove of trees, so this Norfolk highland has retained its character through the many centuries. The immense Roman remains on the road to Cromer suggest that it is not improbable that Kelling may have indeed been a high place and grove for one of the Eastern cults latterly adopted by the Empire. From the Kelling heights one can see the road upon which King John travelled on his way to lose his treasure in the Wash. He stayed the night at the still-existing manor farm at Cley, once a famous seaport, patronized by Edward III. and Richard II. Edward protected Cley from Dutch competition, but the Dutch influence remains till this day, as witness the perfect Dutch houses and the dykes and sluice-gates. It was here that Prince James of Scotland was washed ashore, and imprisoned for eighteen years in Windsor Castle, afterwards becoming James I. of Scotland, and a poetic follower of Chaucer. Cley Church possesses a rare treasure in the form of a fourteenth-century safe with secret cupboard for hiding precious chalices. There are many other centres of equal interest in this favoured region. In this health-giving district of many charms is situated the Selbrigg Sanatorium. This was specially built in 1921 at Kelling for the reception of private patients suffering from pulmonary and other forms of tuberculosis, and opened by Dr. J. W. Morris, who has served as the Medical Superintendent of Kelling Sanatorium since 1910—the patients being under the personal care of Dr. Morris. The intention is that only a few private patients shall be taken, in order that each might have personal supervision and consideration. The decision of Dr. Morris to provide a sanatorium for private patients in this district has been influenced by the excellent results which he has experienced at Kelling Sanatorium, where some of the most robust and active employees, such as gardeners, orderlies, upholsterers, and joiners (not to mention nurses) were former patients, and his conviction that these results must be attributable to something more than the care which they had received. This "something more" is the remarkable climatic conditions obtainable in the Kelling district of Norfolk, with its low rainfall and high sunshine record, its dry, bracing air, so dry indeed that it is unusual to feel the climate cold even in the depth of winter. On a recent day with frost and an easterly wind a visitor entered a wing of Selbrigg Sanatorium in which the radiators were temporarily stone cold, and remarked that the interior was as warm as if a good fire had been burning. This result is partly due to the shelter afforded by an adjoining dense wood of pines which protects Selbrigg from east winds. Hardships are virtually reduced to nil at Selbrigg; with its southern aspect and its verandahs with

movable windows, open-air treatment becomes a pleasure. All needed comforts are provided; the atmosphere is homely, as witness the patients' sitting-room, which might be that of an artistically furnished country house. The gardens are charming; for the function of the eye in healing the body, as the Greeks understood it, is not overlooked. Patients who are strong enough can motor or walk to the places of



SELBRIGG SANATORIUM, HOLT, NORFOLK.
A general view, with open-air shelters in the grounds.

interest in the neighbourhood. And for those who wish to employ their time at a craft, there is cabinet-making, joinery, upholstery, poultry farming, etc. Gardening is available for those whom such work fascinates. These occupations, together with exercise and drives, make life at Selbrigg as pleasant as possible. There is also a complete wireless installation available, and last, but not least, there is a visitor, Collin, from the Kelling Sanatorium shop, who arrives each morning

with his tray of goods, a supply of postage stamps, and a willingness to carry out any orders for goods in the neighbouring town of Holt, which is one and a half miles away. Selbrigg takes its name from the picturesque Selbrigg Water, a lovely duck-infested stretch amid the pine woods. If there is a climate which approximates to that of Switzerland in this country, it is that which is to be found at Kelling; indeed, patients have come from Switzerland to Kelling, and have been turned out robust and fit.

The Fourteenth Annual Report of the King Edward VII. Welsh National Memorial Association is a handsome and charmingly illustrated record of the effective work which is being carried out in the principality by the wisely organized body of which Mr. David Davies is President. The Report contains a fine portrait of the late Sir David W. Evans, the Director and Legal Adviser of the Association, furnishes an account of its history and constitution, and presents special reports from the various area officers and medical superintendents engaged in tuberculosis service throughout Wales. There are numerous valuable statistical tables and other data. Professor S. Lyle Cummins, who has served the Association for many years, has retired from the post of Principal Medical Officer, and is to be succeeded by Dr. D. A. Powell. Colonel Cummins retains his connection with the Association as Director of Research and Hon. Consultant, and will now be enabled to devote the greater part of his time to his duties as Professor of Tuberculosis in the Cardiff Medical School.

The Twentieth Annual Report of King Edward VII. Sanatorium, Midhurst, furnishes particulars regarding the work of the institution. Two hundred and sixty-eight patients have been admitted during the year ending June 30, 1926. There are tables giving statistical data regarding the cases. Those relating to ultimate results as obtained by an investigation concerning all cases who have passed through the sanatorium since 1906 are of special interest and value.

We have received from the State of Connecticut Public Document No. 53, "Report of the State Tuberculosis Commission," which contains instructive illustrations, and a narrative and statistical record of activities carried out in the interests of tuberculosis, and as part of a State Anti-Tuberculosis Campaign in Connecticut.

The Joint Tuberculosis Council has arranged for a post-graduate course on tuberculosis to be held in Copenhagen organized by Dr. Axel Reyn. The course will be largely of a clinical nature; members will see much of the work of the Finsen Institute, and there will be opportunities of visiting the various hospitals in Copenhagen. The party will leave Harwich on Saturday, May 7, and return to Harwich on Saturday, May 21. The approximate fare per person will be £25, covering travel, meals, hotel and gratuities. An application has been made to the Minister of Health to allow this course to rank for grant. Further details may be obtained from the hon. secretary, post-graduate courses, The Larches, Farnham Royal, Bucks.

NOTICES OF BOOKS.

AN X-RAY STUDY OF PNEUMOCONIOSIS.

SILICOSIS has attracted much attention in recent years. Drs. Pancoast and Pendergrass have written a monograph which provides a lucid account of modern knowledge on the subject, and furnishes a careful review of the opinions of other writers who have made a special study of diseases of the lungs occurring in association with occupations in dust-laden atmospheres.[1] As the title of the book indicates, it was intended that the radiological study of pneumoconiosis should occupy the chief place, but the authors have greatly increased the value of their work by discussing its pathology, its economical aspect, and its prevention. The term pneumoconiosis is retained as generic, but it is pointed out that in anthracosis, siderosis, and chalicosis the free silica is held to be the most important active agent in provoking fibrosis in the lungs. Hard rock mining, anthracite coal mining, rock drilling, blasting and crushing, granite cutting, and sand blasting, all levy their toll, and workers in pottery factories, and even residents in districts where sandstorms occur, may develop silicosis. Preventive measures include systematic radiological examination of the workers at set intervals, the abolition of dry drilling, spraying with water to allay dust, and adequate cleanliness and ventilation in factories and kiln-rooms. The cause of silicosis is traced to very fine particles which pass beyond the ciliated epithelium and reach the alveoli, where they are taken up by cells, probably endothelial in origin. The "dust cells" at first gather in the alveoli, and then move along the alveolar ducts to enter the first outpost of the lymphatic drainage system. The lymphoid tissue undergoes hypertrophy, and the dust cells slowly travel on, eventually reaching the tracheo-bronchial glands. The process begins by way of removing the dust from the alveoli, but the continued inhalation of fresh supplies of dust leads to choking of the lymphatics by the cells, which tend to aggregate into groups, which form the basis of the "pseudo-tubercles" and the starting-points of the fibrosis. Thus, whilst a fine nodular fibrosis is beginning in the alveoli and extending centrally, a more diffuse fibrosis resulting from the clogging of the lymphatic channels at the lung root develops in the interstitial lung tissue and extends outwards. As the lymph block increases there is a tendency for a back flow towards subpleural lymphatics, where similar changes occur, resulting in fibrous nodules, thickened pleura, and adhesions. Radiographically three stages in the disease have been recognized by different observers. The first stage is characterized by an increase in the hilar shadows, a thickening of the trunk shadows in the mid-zone, and an increase of the linear markings at the periphery. The root glands may be enlarged. In the second stage the typical mottling is seen due to the presence of fibrotic nodules which have reached sufficient size to

[1] "Pneumoconiosis (Silicosis): A Roentgenological Study, with Notes on Pathology." By Henry K. Pancoast, M.D., and Eugene P. Pendergrass, M.D. Pp. 183, with 23 illustrations. New York: Paul B. Hoeber, Inc. 1926. Price $4.00.

become evident, the first stage appearances being sometimes present, but at others wanting. There is usually limitation of movement of the inner part of the diaphragm. The third stage shows the density caused by diffuse fibrosis arising in areas where the nodules appear close together, or from actual coalescence of the nodules. There is usually pleural thickening. Massive fibrosis occurs with the appearance of extensive pulmonary consolidation, usually subapical, and more or less symmetrically situated in both lungs. Fibrous bands can be seen, usually extending downwards, and often associated with marked deformities in the diaphragm, the movement of which may be much restricted. Recently an anteprimary stage, with nothing but a slight hazy increase of density in the central portions of the lung fields, has been recognized in cases where previous radiographs are known to be free from abnormality. Interesting points are given in the differential diagnosis from the films and on the relation of tuberculosis to fibrosis. Reports and statistics prove the predisposition of the silicotic lung to infections, and particularly to tuberculosis. The massive fibrotic areas in the third stage appear frequently to be associated with infection. Where silicosis and tuberculosis are coincident in the case of potters, who inhale relatively small amounts of silica, the fibrosis appears to be in some degree protective; and in the case of coal miners, the coal dust seems to have an inhibitory effect on tuberculosis. In the rapid silicosis of other occupations the lung is acutely inflamed, and a fertile field for tuberculosis. A short review of dusty occupations includes particulars from many countries as to the incidence of pneumoconiosis, and the average period after which the various stages of the disease have become evident. A list of references and separate indexes for authors and subjects are given. Like others of Messrs. Hoebers' publications, the book is excellently bound and printed in good type on fine paper. Many of the skiagrams are well reproduced, but several—*e.g.*, No. 20—fall short of the standard. The authors are to be congratulated on their success in presenting the essential features of the subject so comprehensively and at the same time so concisely.

J. E. A. Lynham, M.D., M.R.C.P.

THE TREATMENT OF TUBERCULOSIS BY THE PRODUCTION OF ARTIFICIAL PNEUMOTHORAX.

An interesting report has been issued by the National Public Health Department of Rio Janeiro in connection with the official organization for a movement seeking the prevention of tuberculosis.[1] It gives particulars of 117 cases treated by artificial pneumothorax in the year 1924 at the Central Dispensary, and twenty-one cases treated at the Botafogo Dispensary, with fuller clinical records of a number of selected cases. The patients were under the observation of several medical officers, and whilst the benefits derived from the treatment are described, the cases in which no improvement followed are included, so that the reader is enabled to form a fair judgment of the value of the procedure. The organization of the dispensaries is described, and details are given concerning the clinics and the technique adopted. Adequate para-

[1] "Relatoria do Serviço de Pneumothorax Therapeutico, 1924." By Drs. Mazzini Bueno, G. Pitanga Filho, Ary Miranda, and Alexandre Stockler. Rio de Janeiro, 1926.

graphs dealing with the selection of cases, the reaction of patients, the complications, difficulties, and accidents which may occur, provide a concise and informative account of artificial pneumothorax in practice. The cases described vary from those with a limited infection of one lung to others where both lungs were extensively involved and the treatment was instituted as a forlorn hope. Radioscopic and radiographic control are regarded as essential, and the report is illustrated by thirty-one radiographs showing the conditions before the operation, the degrees of collapse attained, and some of the complications due to pleural adhesions. An account is given of the deductions which can be made from the response of the patient as an aid in prognosis. Statistical tables deal with various aspects of the treatment and its results. Details are given of the amount of air injected in each case, and of the intervals between successive refills. The report forms an interesting contribution to medical literature on artificial pneumothorax in pulmonary tuberculosis. J. E. A. LYNHAM, M.D., M.R.C.P.

THE CONQUEST OF TUBERCULOSIS.

TUBERCULOSIS is a medico-sociological problem, and if it is to be conquered all sorts and conditions of men and women and children who are the sufferers in the invasion by this enemy of mankind must join in the campaign. And this can only be effectively waged if the people themselves understand the reason for and nature of the conflict. And so scientifically directed educational propaganda should form an essential feature in the anti-tuberculosis movement. We therefore welcome such a book as Mr. David Masters has written on the conquest of tuberculosis.[1] It is dedicated "to those who are fighting tuberculosis," and, as Sir Bruce Bruce-Porter indicates in his sympathetic introduction, it is interesting, convincing, common-sense, and understandable. Indeed, it is the most lucid, instructive, and stimulating of the many modern popular books which have sought to educate the non-medical public. Mr. Masters estimates that no less than 40,000 people die from tuberculosis every year in England and Wales; since the Great War 300,000 persons have been slain in England and Wales. In the United States of America in the same time over 1,000,000 have fallen, the yearly toll exacted being as great as the total losses suffered by America in the European conflict. The world's deaths from tuberculosis since the end of the war are estimated as over 35,000,000. Mr. Masters has studied his subject thoroughly, and his book affords evidence of his wide reading, reference being made to the chief work and workers of recent time. The book is one which can be studied both by medical and non-medical readers interested in tuberculosis. It is the best popular exposition of tuberculosis which has been written—clear, comprehensive, and thoroughly practical. Many will doubtless think that facts scarcely justify the author's enthusiastic support of Spahlinger's methods.

[1] "How to Conquer Consumption," by David Masters. With an Introduction by Sir Bruce Bruce-Porter, K.B.E., C.M.G. Pp. ix + 252. London: John Lane, The Bodley Head, Ltd. 1926. Price 6s.

PULMONARY TUBERCULOSIS.

Dr. H. Hyslop Thomson and Dr. A. P. Ford have produced an ideal guide-book for general medical practitioners desiring a concise, practical, up-to-date exposition regarding pulmonary tuberculosis.[1] Special stress is laid on the essential points of early diagnosis and early and continuous rest in treatment. The authors have relied mainly on their own experience, which has been extensive. The subject-matter is effectively arranged in nineteen chapters. Starting with an historical survey and a consideration of administrative and tuberculosis schemes, there follows a series of chapters dealing chiefly with clinical features. There is a serviceable section on pulmonary tuberculosis in children. The technique of artificial pneumothorax is described not because the authors desire the general practitioner to attempt this form of treatment, but because it is a comparatively new procedure and embodies the important principle of rest which has for too long been misunderstood and neglected. There is a good summary of Hilum or Root Tuberculosis. Practitioners will appreciate the excellent sections on the treatment of symptoms and complications and special methods of treatment which include the employment of tuberculin, sanocrysin, and other forms of specific therapy. One of the most serviceable chapters deals with after-care and employment. A good chapter is devoted to the difficult subject of prognosis. The concluding chapter deals with the nursing of tuberculous patients. The Appendix contains a number of valuable prescriptions.

Dr. Stuart Tidey's little work on compression therapy will interest all who realize that general and local rest is of fundamental importance in the management of cases of pulmonary tuberculosis.[2] The author's main contention is "that relaxation of the peripheral pull on diseased areas is the element essential to the healing of pulmonary lesions, and that it may be effected without collapse of the lung." Dr. Tidey, in his compact monograph, sets forth his views and describes his methods of strapping the chest of the tuberculous subject in a form which deserves unprejudiced consideration.

RADIATION-THERAPY.

Radiation-therapy, which is proving of considerable service in the cure of various morbid conditions, is of outstanding advantage in the arrest of many tuberculous affections. Dr. Edgar Mayer has recently issued a monumental treatise on heliotherapy, actinotherapy, and X-ray-therapy, which should be in the hands of every student of

[1] "Tuberculosis of the Lungs: A Practical Guide for General Practitioners," by H. Hyslop Thomson, M.D., D.P.H., County Medical Officer of Health and County Tuberculosis Officer for Hertfordshire; formerly Tuberculosis Officer for Newport and East Monmouthshire; Medical Superintendent, Liverpool Sanatorium; and Medical Superintendent, Consumptive Sanatorium of Scotland, Bridge of Weir; and A. P. Ford, M.R.C.S., L.R.C.P., D.P.H., Clinical Tuberculosis Officer and Deputy County Medical Officer of Health for Hertfordshire. Pp. x+179, with thirty charts and Figs. London: Baillière, Tindall and Cox. 1927. Price 10s. 6d.

[2] "Compression of the Lung in the Treatment of Pulmonary Lesions," by Stuart Tidey, M.D., M.R.C.P., Diplomate in Medicine of the Swiss Federation and of the Province of British Columbia. With a Foreword by Sir W. Arbuthnot Lane, Bart., F.R.C.S. Pp. xiv+86. London: Humphrey Milford, Oxford University Press, Amen House, Warwick Square, E.C. 4. 1926. Price 3s. 6d.

radiant energy and medical practitioners desiring up-to-date, reliable, serviceable information and guidance in regard to the action of natural and artificial light as a healing agent.[1] This comprehensive, scholarly, and yet thoroughly practical review of the clinical applications of sunlight and artificial radiation will be sure of an enthusiastic reception from doctors on both sides of the Atlantic. Dr. Mayer is a specialist in tuberculosis, and has used actinotherapy for nearly ten years in dealing with tuberculous disease. His book is based on extensive experience, and he has studied his subject in all its bearings on the welfare of the human subject. A bibliography of over 2,000 references is provided. The work opens with an excellent historical introduction, a discussion of the nature of radiation, an exposition of fundamental facts regarding the action of light on growth and nutrition in animal and plant life, and an account of the effects of radiant energy upon bacteria and related biological products. Then follow intensely interesting chapters on the Physiological Action of Light, the Skin as an Organ, the Sensitization of Tissues to Light, the Influence of Climate on Solar Radiation, and the Clinical Applications of Solar Energy and Aerotherapy. There are highly practical sections on the Sources of Light Used in Therapy; the Dosage and Technique in the Clinical Use of Artificial Light, particularly in the form of the Mercury-Quartz Arc and Carbon Arc; and Indications and Contra-indications for Irradiation. There is also a suggestive chapter on the X-ray Treatment of Tuberculosis. The work also contains records of experimental and clinical studies, and in a lengthy appendix appear studies on the influence of light on biochemical reactions. The admirable illustrations form a special feature of the book. The volume is dedicated to Dr. Edward R. Baldwin, "Investigator of Tuberculosis, Teacher, and Inspiring Adviser." Dr. Mayer is to be congratulated on having produced the most helpful and complete medical treatise on radiation-therapy which has as yet appeared, and his handsome volume should be in the hands of every progressive medical adviser.

Rollier of Leysin has accomplished more than any other living man in revealing and rendering natural light treatment practical in the service of tuberculous sufferers. We gladly welcome a new English edition of his great work on Heliotherapy, which is based upon the German edition of 1924.[2] In many respects the new edition differs from the first edition which appeared in 1923, but we are glad to see that the Forewords, by Sir Henry Gauvain and Dr. C. W. Saleeby, are retained. The work has been rendered into effective English by Dr. G. de Swietochowski, and it is issued as one of the Oxford Medical Publications in the admirable form which we now expect in this popular series. The volume is generously illustrated: the figures are excellently presented, being printed on special art paper. Dr. Rollier deals almost entirely with the application of heliotherapy to cases of so-called "surgical tuberculosis," but his work is one which should be

[1] "Clinical Application of Sunlight and Artificial Radiation: Including their Physiological and Experimental Aspects, with Special Reference to Tuberculosis," by Edgar Mayer, M.D., of Saranac Lake, New York. Pp. xvi+468, with thirty-six plates, fourteen figures and charts. London: Baillière, Tindall and Cox. 1926. Price 45s.

[2] "Heliotherapy: With Special Consideration of Surgical Tuberculosis," by A Rollier, M.D. Translated by G. de Swietochowski, M.D., M.R.C.S. Pp. xxiv+318, with 273 illustrations. London: Humphrey Milford, Oxford University Press Amen House, Warwick Street, E.C. 4. 1927. Price 21s.

in the hands of every medical adviser who desires authoritative information regarding the principles and practice of heliotherapy, details of technique, and records as to clinical results. A particularly interesting section is devoted to a statistical analysis of the results of cases dealt with at Leysin. The volume opens with a short historical outline, a record of experimental studies, and an exposition of the rôle of climatology; and then come the main sections of the work dealing with actual clinical data. There are also interesting chapters on Heliotherapy and Work, General Characteristics of Solar Action, Radiological Control of Results, Heliotherapy and Convalescence, and a special chapter is devoted to a consideration of Heliotherapy and the Management of Non-Tuberculous Affections. There is also a chapter on Contraindications to Sun-Cure. Dr. Ernest Amstad has provided a suggestive article on the Supporting Action of Actinotherapy by Means of Artificial Sources of Light and X-rays. Special attention should be directed to the chapter dealing with Light as a Prophylactic Agent, in which appears a series of charming pictures of children at the "School in the Sun," Les Noisetiers, at Cergnat, near Sepey, in the Ormont Valley, and not far from Leysin. The volume contains a serviceable bibliography; the entries under Rollier's name number no less than thirty-six—fine evidence of the scientific services of this pioneer and benefactor of mankind.

A year ago we directed attention to a new work on radiation-therapy by Drs. E. H. and W. Kerr Russell (Vol. XX., No. 1, p. 37). This excellent treatise has speedily received the approval it deserved, and we are delighted to welcome the second edition which lies before us.[1] The volume has been increased from 262 pages in the first edition to 464 in the second, and the illustrations have been increased from 77 to 168. As we indicated in our former notice the book provides medical practitioners with a lucid, helpful, and reliable guide to radiation-therapy. Sir Oliver Lodge commends it and Mr. Sydney Walton provides a charming personal benediction. The volume furnishes just the historical, physico-chemical, technical, and clinical introduction to actinotherapy which busy medical advisers require. The work is effectively produced on splendid paper, and the numerous illustrations are presented in first-class style and form a notable feature of a particularly serviceable handbook.

The Sollux Publishing Company have recently issued a valuable series of publications dealing with the practical application of ultra-violet radiation in the prevention and arrest of disease.[2] Dr.

[1] "Ultra-Violet Radiation and Actinotherapy," by Eleanor H. Russell, M.D., B.S., and W. Kerr Russell, M.D., B.S., Hon. Actinotherapist, Sun-Ray Clinic, Newcastle-on-Tyne. With Forewords by Sir Oliver Lodge, F.R.S., D.Sc., LL.D., and Sydney Walton, C.B.E., M.A., B.Litt. Second Edition. Pp. xxxi+429, with 168 illustrations. Edinburgh: E. and S. Livingstone, 16 and 17, Teviot Place. 1927. Price 15s.

[2] "Sunlight as Healer: A Popular Treatise," by Dr. F. Thedering. With a Foreword by Sir William Arbuthnot Lane, Bart., C.B., M.S. Pp. 56, with illustrations. Translated from the fifth German edition. Price 2s. 6d.—"Light Therapy and Pulmonary Tuberculosis," by the late Dr. Hans L. Heusner (Giessen). Revised and enlarged by Hugo Bach, M.D. Pp. 48, with illustrations. Price 1s. 6d.—"Light as Stimulus and its Therapeutic Indications," by Professor A. Jesionek, Director of the University of Skin Clinic, Giessen. Pp. 27. Price 1s.—"The Biological Basis of Ultra-Violet Therapy," by Professor G. A. Rost, M.D., Director of the University Skin Clinic, Freiburg. Price 1s. Slough, Bucks: The Sollux Publishing Company. A complete list of the publications of the Company can be obtained on application.

F. Thedering has provided a popular exposition of sunlight as a healing agent, to which Sir W. Arbuthnot Lane has contributed a sympathetic foreword. The brochure of the late Dr. Hans L. Heusner deals with light-therapy for cases of tuberculosis of the lungs, but offers a warning that "powerful local radiation of those portions of the chest over the tuberculous focus should only be carried out if there is no tendency to hæmorrhage." Professor A. Jesionek treats of the biochemical activity of solar radiation, and indicates its therapeutic value as a stimulus. Professor G. A. Rost furnishes an informing account of the biological action of ultra-violet radiation. These and other brochures, which may be obtained from the same firm, will be particularly helpful to medical practitioners desirous of obtaining in a compact, lucid form reliable information regarding the latest knowledge relating to ultra-violet therapy.

MANUALS FOR MEDICAL ADVISERS AND WORKS OF REFERENCE.

Dr. A. P. Cawadias has produced a new work on intestinal disease which is something of a novelty.[1] It is based on a study of intestinal morbid reactions viewed as a "syndrome" and distinguished from the symptom complex. His presentation of intestinal disease will doubtless appear new and perhaps involved, but it is highly suggestive. Dr. Cawadias contends that the new conception affords a more accurate and helpful basis, enabling the physio-pathological mechanism of morbid reactions to be better understood. He holds that the clinician who wants to diagnose and cure an individual patient has first to detect the various symptoms and signs, then to group them into syndromes and lastly to find the etiology, external and constitutional, of these syndromes. The book lays stress on pathological physiology, and on clinical diagnosis. The chapters are grouped under the following main headings: The Inflammatory Syndromes in General; The Diffuse Inflammatory Syndromes of the Intestine and Localized Inflammatory Syndromes; The Motor Syndromes and The Vascular Syndromes, and Some Special Syndromes and Diseases. Medical practitioners, and particularly tuberculosis officers and those engaged in the care of tuberculous cases, in whom intestinal disorders, both functional and organic, are common, will find much in Dr. Cawadias' able monograph which is new and likely to be of practical service. The volume contains a select bibliography.

The majority of tuberculous subjects are or have been sufferers from oral disorders and dental lesions. Pyorrhœa alveolaris is common in these cases, and not infrequent dental abscesses and other conditions giving rise to oral sepsis are noted. In not a few instances the first steps in undertaking the treatment of a tuberculous patient is to deal with dental defects and deficiencies, and arrest conditions which are maintaining oral sepsis and general auto-intoxication. All medical

[1] "Diseases of the Intestines," by A. P. Cawadias, O.B.E., M.D. (Paris), M.R.C.P. (London), Formerly Chief of Medical Clinic, Paris University, Beaujon Hospital; Formerly Assistant Physician for the Out-patients, Gastroenterological Clinic, Hôtel Dieu Hospital, Paris; and Senior Physician and Lecturer for Clinical Medicine, Evangelismos Hospital, Athens. Pp. xiv + 300, with twenty-six illustrations. London: Baillière, Tindall and Cox. 1927. Price 16s.

advisers responsible for the treatment of tuberculous patients should have some knowledge of the principles and practice of dental medicine and surgery. To all such we commend the "Outlines of Dental Science" series of handbooks recently published by E. and S. Livingstone.[1] They provide concise, informing, helpful expositions regarding all the chief features of dental work in a form which medical practitioners will appreciate and find of service. Dr. G. F. Rawdon Smith furnishes a condensed, well-arranged account of the production of "General and Local Anæsthesia as required in Dental Practice." This is a manual which will be of special interest to young practitioners, who often have to act as an anæsthetist for a dental surgeon. The work is based on lectures delivered to dental students in the University of Liverpool. Dr. Ralph A. Broderick deals with "Dental Bacteriology" in an elementary way, and describes the chief organisms met with in connection with dental lesions. Mr. P. H. Marsden is responsible for the volume on "Dental Materia Medica," which is conveniently arrayed under pharmacological and therapeutic headings, and presents useful data in a serviceable manner. Mr. J. Douglas Logan is the author of the outlines on "Dental Prosthetics." This manual is one of the best of the series, and affords the doctor a considerable amount of practical knowledge regarding denture construction in a form such as will be helpful to him in actual practice. The book is effectively illustrated. Mr. C. A. Clark's manual on "Dental Radiography," as far as it goes, is a timely contribution. The technique is described in general terms, and there are reproductions of radiographs, together with practical advice as to apparatus, tubes, dark-room, and interpretation of negatives. The illustrations add considerably to the value of the book. These volumes, although elementary in character and necessarily limited in range, will nevertheless go far to meet the aims of publishers and authors. They are attractively got up, well printed on good paper, and excellently bound.

Medical workers in laboratories attached to hospitals and sanatoria where investigations relating to tuberculous cases are being carried on will be grateful to Dr. Edward Moreau for his concise, well-arranged, serviceable, complete, and up-to-date guide to the elaborate and often complicated technique of methods and measures which have to be employed in the study of individual cases of tuberculosis.[2] The work

[1] "Dental Anæsthesia," by G. F. Rawdon Smith, M.B., B.S. (London), M.D. (Liverpool), Lecturer on Dental Anæsthetics, University of Liverpool. Pp. 160, with 24 figures.—"Dental Bacteriology," by Ralph A. Broderick, D.S.O., M.C., Ch.B., M.D.S. (Birmingham), L.D.S.R.C.S. (England), Lecturer in Bacteriology to Dental Students, Birmingham University. Pp. 144, with coloured frontispiece and 19 figures.—"Dental Materia Medica," by Prosper H. Marsden, M.Sc., Ph.C., F.C.S., Lecturer on Materia Medica, University of Liverpool. Pp. 155.—"Dental Prosthetics," by J. Douglas Logan, L.D.S. (England), Lecturer on Dental Mechanics; Clinical Prosthetic Dental Surgeon, Edinburgh Dental Hospital.—"Dental Radiography," by Charles A. Clark, L.D.S.R.C.S. (England), Consulting Radiologist, Royal Dental Hospital, London, etc. Pp. xiii+98, with 50 figures. Edinburgh: E. and S. Livingstone, 16 and 17, Teviot Place. 1927. Price 7s. 6d. net each volume; postage, 4d.

[2] "Techniques de Laboratoire pour le Diagnostic de la Tuberculose," par Ed. Moreau, Chef de Laboratoire à l'Hôpital de Saint Germain-en-Laye. Préface de A. Besredka, Professeur à l'Institut Pasteur. Pp. 196, with 22 figures. Paris: Grande Librairie Médicale, A. Malonie, Norbert Malonie, 27, Rue de l'École-de-Médicine. 1926. Prix 12 frs.

is divided into two parts, dealing respectively with direct methods, such as microscopic examinations, inoculation of guinea-pigs, cultures; and indirect methods, like complement fixation, serological, cytological, and chemical inquiries. This little volume will prove an indispensable companion for all laboratory workers connected with institutions dealing with tuberculous cases.

Dr. Hewat's pocket manual on clinical laboratory methods, first published in 1884, has for many years proved of the greatest service to senior medical students and young practitioners, and now Dr. Malcolm-Smith has provided a seventh edition, thoroughly revised and brought up to date.[1] This justly popular and practical guide has had new sections added on fractional gastric analysis, renal efficiency tests, examination of cerebro-spinal fluid. It will be invaluable to busy practitioners, tuberculosis officers, and others without special laboratory experience and possessed only of limited apparatus.

Members of the nursing staff of chest hospitals and those who have to lecture to them will appreciate Dr. A. I. G. McLaughlin's practical little manual on diseases of the heart and lungs.[2] It presents in clear, succinct, serviceable sections essential facts concerning the causes, nature, symptoms, and treatment by nursing of the chief diseases involving the heart and lungs. There are also short chapters dealing with the anatomy and physiology of the thoracic organs. Modern methods, such as artificial pneumothorax and thoracoplasty, are referred to, and there is an excellent chapter descriptive of the management of cases of pulmonary tuberculosis.

Dr. M. Vlasto has produced a concise, lucid, practical, and well-illustrated guide to the nursing of subjects with nose, ear, and throat troubles.[3] It is a book which nurses and those responsible for their training will find serviceable. Many tuberculous patients are the subjects of morbid conditions affecting the respiratory passages, and it is essential that tuberculosis officers and nurses engaged in tuberculosis services should be acquainted with the best modern technique for dealing with all such cases. Dr. Vlasto's handbook provides all necessary information in a particularly attractive form. The numerous carefully selected illustrations add considerably to the value of this well-planned and effectively presented manual for nurses.

Dr. Harrower's studies on endocrines are well known in this country, and his latest work will be welcomed by many biochemists and clinicians interested in the rôle of the liver in health and disease,

[1] "Hewat's Examination of the Urine and other Clinical Side-Room Methods." Revised and enlarged by G. L. Malcolm-Smith, M.B., Ch.B., F.R.C.P.E., Clinical Registrar, Longmore Hospital, Edinburgh. Seventh edition. Pp. 228. Edinburgh: E. and S. Livingstone, 16 and 17, Teviot Place. 1926. Price 3s.

[2] "Diseases of the Heart and Lungs: A Handbook for Nurses," by A. I. G. McLaughlin, M.B., Ch M. (Sydney), Assistant Medical Officer, Tuberculosis Department, St. Thomas's Hospital. Pp. 185. London: Faber and Gwyer, Ltd., 24, Russell Square, W.C. 1. 1926. Price 4s. 6d.

[3] "The Nursing of Diseases of the Nose, Ear, and Throat," by Michael Vlasto, M.B., B.S., F.R.C.S. Assistant Surgeon to Ear, Nose, and Throat Department, West London Hospital; Aural surgeon to Queen's Hospital for Children, West Herts Hospital, and St. Luke's Hostel for the Clergy. Pp. xiv + 229 with 104 figures. London: Faber and Gwyer, Ltd., The Scientific Press, 24, Russell Square, W.C.1. 1926. Price 6s.

particularly in relation to blood pressure.[1] Hyperpiesis is believed to be a manifestation of disordered metabolism. Dr. Harrower has discovered in anabolin what he conceives to be an internal secretion of the liver, which may have a marked influence in dealing with a toxæmia which is causally related to deranged blood pressure. Anabolin, he holds, is neither histamine nor choline, but an original substance which can be separated from hepatic cells, and it would seem likely to prove of therapeutic value. Dr. Victor Robinson, of New York, provides the first chapter, which deals with the development of our present knowledge regarding the liver. Then follow chapters on the liver as an endocrine organ, the testing of hepatic functioning, the separation of liver principles, and the physiological action of anabolin. There are records of researches by various investigators, and a summary is provided regarding matters relating to the present status of anabolin and hepatic depressor therapy. Time and trial can alone show whether anabolin will prove of any permanent service in the treatment of high blood pressure or other morbid states, but meanwhile Dr. Harrower's suggestive manual merits unbiassed consideration. It is admirably presented with a concise summary at the head and a bibliography of each chapter.

"Finlayson's Clinical Manual" was first issued in 1878, and was a pioneer work which was greatly valued by students and practitioners forty years ago. The third and last edition appeared thirty-five years ago, and now is issued a new edition under the old name, but, to all intents and purposes, it is a fresh work, although modelled on the old lines.[2] Editors and publishers are to be congratulated on their courage, which we trust may be justified. Professor Finlayson's manual was so excellent, particularly in regard to the stress laid on general clinical principles, that many will rejoice at the rejuvenescence of a notable introduction to clinical medicine. Many members of the Glasgow Medical School have participated in the production of this fourth edition, and include Dr. W. Herbert Brown, Professor C. H. Browning, Mr. J. Douglas Brownlie, Dr. J. Carslaw, Professor E. P. Cathcart, Dr. E. M. Dunlop, Professor J. S. Dunn, Professor L. Findlay, Dr. J. Gracie, Dr. A. A. Gray, Dr. A. W. Harrington, Dr. W. R. Jack, Dr. A. B. Kelly, Dr. A. Love, Dr. W. Macadam, Dr. J. H. Macdonald, Mr. F. Macrae, Professor A. Patrick, Dr. A. M. Ramsay, (Hon. Director, James Mackenzie Institute for Clinical Research, St. Andrews) and Dr. W. Shannon. The work opens with a study of the Physiognomy of Disease by the late Sir William T. Gairdner. Several sections originally written by the late Dr J. Finlayson are reproduced, although of course revised and brought up-to-date. We earnestly commend this admirable work to present-day students and clinicians.

[1] "The Hepatic Principle, Anabolin, Detoxication by the Liver, and the Control of Functional Hypertension," by Henry R. Harrower, M.D., with a Foreword by Ivo Geikie Cobb, M.D., and an Historical Introduction by Victor Robinson, M.D. Pp. 147. London: Baillière, Tindall and Cox. 1927. Price 10s. 6d.

[2] "Finlayson's Clinical Manual for the Study of Medical Cases." Fourth edition. Edited by Carl H. Browning, M.D., E. P. Cathcart, M.D., F.R.S., Leonard Findlay, M.D., D.Sc. Revised and augmented throughout by various contributors. Pp. xvi+815, with 3 colour plates and 143 figures. London: G. Bell and Sons, Ltd., York House, Portugal Street, W.C.2. 1926. Price 18s.

A new and eighth edition of "Wheeler's Handbook of Medicine," prepared by Dr. W. R. Jack, has just been issued.[1] The first edition appeared in 1894, and subsequent editions have been received with ever-increasing approval. It is a compact, lucid, comprehensive, and attractively presented exposition of the essentials of the principles and practice of medicine, forming an ideal manual for the average medical student and busy practitioner. We are glad to direct attention to the present volume, which has been thoroughly revised and brought up-to-date, because it provides for the tuberculosis officer and others engaged in this work of specialities an admirable, manageable general summary, which can be easily read through, thus enabling the medical graduate to maintain an open mind and a refreshed memory regarding essentials which should be kept ever in view. There are good sections on tuberculosis.

Occupation-therapy is becoming generally recognized as of great importance in the management of tuberculous patients in hospitals and sanatoria, as well as affording means for the increase of happiness in their own homes. We desire to direct the attention of medical advisers, nurses, and patients to a particularly suggestive and serviceable guide to the making of models. Mr. E. W. Hobbs has produced an ideal handbook on "Pictorial House Modelling"[2] which provides a peculiarly fascinating and instructive pastime for people of all ages and either sex, and one which is particularly attractive to those interested in architecture, building, house-construction, and house-making. The book is a detailed, illustrated, descriptive handbook, which we commend to the attention of all our readers.

The latest of Mr. Reddie Mallett's "Nature's Way" manuals consists of a collection of simply expressed popular "talks" regarding certain principles and practices which the author believes will be conducive to health, and the prevention and arrest of disease.[3] References are made to various methods for dealing with consumption; and instead of cod liver oil, fruits, muscatels, nuts, and olive oil are recommended. The author has evidently not passed through a medical training, and certainly some of his recommendations will not be generally endorsed by members of the medical profession.

Workers engaged in X-ray work in the country will find the American journal, *The Radiological Review*,[4] and *Archives of Physical Therapy, X-Ray, and Radium*,[5] of much practical service.

[1] "Wheeler's Handbook of Medicine," by William R. Jack, B.Sc., M.D., F.R.F.P.S.G., Hon. Consulting Physician to the Glasgow Royal Infirmary. Eighth edition. Pp. xv+630. Edinburgh: E. and S. Livingstone, 16 and 17, Teviot Place. 1927. Price 12s. 6d.

[2] "Pictorial House Modelling": A Practical Manual explaining how to make Models of Buildings. Illustrated by original photographs and drawings, many made specially for this work by the author. By Edward W. Hobbs. Pp. xvi+190 with 128 figures. London: Crosby, Lockwood and Son. Stationers' Hall Court, Ludgate Hill, E.C.4. 1926. Price 6s.

[3] "The Book of Health," by Reddie Mallett. Pp. 240. London: Watts and Co., Johnson's Court, Fleet Street, E C.4. 1926. Price 7s. 6d.

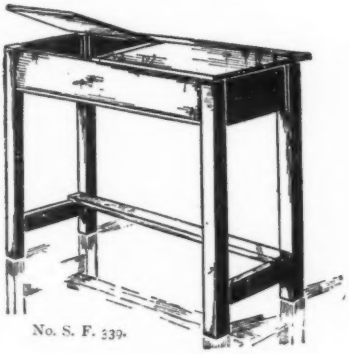
[4] *The Radiological Review:* A monthly journal devoted to the progress of Radiology and Allied Sciences as they relate to the practising physician, edited by Harold Swanberg, M.D., is published by the Radiological Review Publishing Company, Quincy, Illinois. Annual subscription, $2.00.

[5] *The Archives of Physical Therapy*, edited by A. R. Hollender, M.D., is issued by the Radiological Publishing Company, Omaha. Annual subscription, $6.50.

PREPARATIONS AND APPLIANCES.

HYGIENIC APPLIANCES AND THERAPEUTIC PREPARATIONS.

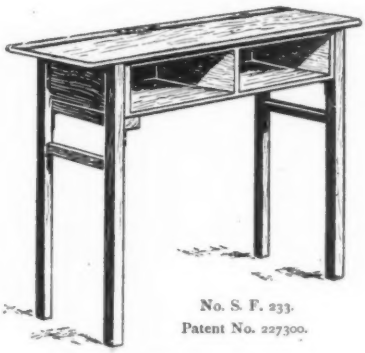
MESSRS. MANN EGERTON AND CO., LTD., of Norwich, make a speciality of school furniture.[1] Their designs and products are based on much practical experience and knowledge of school requirements, and have been approved by education authorities throughout the country. The firm is providing a series of admirable tables and desks for use in open-air schools. Specimens may be seen in use at the open-air school of the Harpenden Sanatorium for Consumptive Children of the National Children's Home and Orphanage. Illustrations of these are annexed. These desks in actual service prove to be most satisfactory, and there can be no doubt they will be used extensively in schools throughout the country. Other forms of equipment are now being made by the same firm, and include work benches, cookery tables, etc.



No. S. F. 539.

A DUAL LOCKER TABLE.

This is of oak and is fitted with 1½-inch unspillable ink well and wire cage, and is made in any height.



No. S. F. 233.
Patent No. 227300.

A FOLDING DUAL BOX TABLE.

This is constructed of oak and can be made in any height.

Doctors and others using a motor-car during the winter will be well advised to provide themselves with one of the scientifically designed, cleverly constructed, and most practical THERM'X FLAMELESS HEATERS.[2]

[1] Prices, specifications, and illustrations of school furniture suitable for open-air schools and other educational establishments may be obtained on application to Mann Egertton and Co., Ltd., Norwich.

[2] The British agents for the Therm'x Flameless Heater (price 30s. in nickel-plae) are Fredk. Pollard and Co. (Bearings), Ltd., Nottingham Road, Leicester, from whom full particulars can be obtained on application.

From practical experience we can testify to the effectiveness of Model No. 12, specially designed for a place in the bonnet of the car or near the engine. The heater is a form of catalytic apparatus invented by French scientists which when placed within the bonnet of the car provides warmth for the motor engine, so that a start can be made without difficulty or delay at any time. The heater functions without smell or smoke, and there is no risk of fire. The adjustment is automatic, and all that is required is replenishing with petrol every twenty-four hours. Other models are available for use in connection with hospital and sanatorium work and a sick-room anywhere. Model No 42 is designed for service in consulting-rooms, halls, offices, etc., and would be of real service for private patients making use of their own open-air shelters. For use during the cold and treacherous days and nights of springtide these catalytic Therm'x Heaters are ideal.

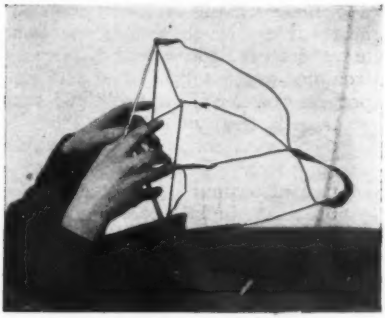
THE THERM'X FLAMELESS HEATER.

Those working in connection with hospitals and other institutions, as well as those in private houses, will find the new "ECLIPSE" MILK SIEVE a vessel of great practical service.[1] The chief features of this hygienic novelty are indicated in the accompanying figure. It is constructed of aluminium. There is a brass gauze filter, with a wire retaining ring and a strong dome-shaped aluminium shield. The latter protects the filter from heavy wear. The milk is distributed over the shield and not directly upon the fine meshed gauze. The sieve has many advantages. It is easy to clean; the filter and shield are readily removed; the bowl shape of the vessel provides a maximum of capacity; strength is obtained with a minimum of weight; and the surface coming in contact with the milk is smooth and free from crevices and projections. This domestic utensil will do much to make it possible to provide a clean milk supply for delicate and fastidious patients.

THE BRABY "ECLIPSE" ALUMINIUM MILK SIEVE.

[1] Particulars regarding Braby's "Eclipse" Aluminium Milk Sieve can be obtained from Frederick Braby and Co., Ltd., Ashton Gate, Aluminium Works, Bristol.

The "HANDSFREE" BOOK REST, as will be evident from a glance at the accompanying figures, is a contrivance which will be much



THE FRAME OF THE "HANDSFREE" BOOK REST.

THE "HANDSFREE" BOOK REST IN USE.

appreciated by patients undergoing sanatorium treatment or "rest cure" anywhere, and particularly under open-air conditions.[1]

REST is of paramount importance in the treatment of most cases of tuberculosis. In the management of tuberculous children rest is a factor of the highest value. Much loss is occasioned by a neglect to provide adequate rest for predisposed and early cases of tuberculosis. And when a tuberculous process has been arrested, if a return of activity is to be prevented, scientifically directed rest must be maintained. Early to bed and late to rise should be the motto for many a presumably cured consumptive. The strength of many tuberculous patients can best be conserved by insisting on breakfast in bed and a good rest after the midday meal. In the supervision of rest, and for the furthering of the comfort of delicate and damaged people when confined to bed, the "TAKE-ABOUT" BED TABLE offers many advantages.[2] The chief features of this practical support are indicated in the accompanying figure. The bed table is strongly constructed of wood which is enamelled in white, or of mahogany, oak, or walnut colour. The legs are made to fold, and then the table, 26 x 13 inches, can be rendered portable, and, if required, can easily be packed in a travelling trunk. The table is fitted with a tray, which is a great convenience. The tray is supplied in different colours, so that all tastes can be met. The table is available in several forms and with varying equipment, and can be supplied to hospitals, sanatoria, and nursing homes at various prices. Special terms are arranged for hospitals, etc.

THE "TAKE-ABOUT" BED TABLE.

THE KNEELEASY APRON MAT will be appreciated by Matrons of Hospitals and Sanatoria and all others who are responsible for domestic services and the welfare of their workers.[3] It has been designed for the use of those who in cleaning floors and the like have to kneel and also require protection for the body and its clothing. The invention is worn as an ordinary apron and has at its lower part a large pocket into which is placed a detachable mattress of fibre. At the sides are pockets for carrying dusters, etc. The Apron-Mat can be obtained in Hessian Foden, white drill or strong blue serge, all complete with mattress at prices ranging from 2s. 11½d. to 12s. 6d.

Children in country hospitals, sanatoria, and open-air schools will welcome the ENHILL BIRD FEEDING SHELTER.[4] It is the invention of Mr. Norman Hill, who has kindly presented one to the Harpenden Children's Sanatorium of the National Children's Home and Orphanage, where it can be seen in actual use. The shelter is a novelty: it is a

[1] Particulars regarding the "Handsfree" (Patent) Necklet Book Rest or Desk can be obtained from the makers, Weintraud, Sons and Co., Ltd., 12-14, Well Street, E.C. 1.

[2] The "Take-About" Bed Table is manufactured by the Northern Manufacturing Company, 48, West Princes Street, Glasgow, C. 4, from whom details regarding the various forms can be obtained on application.

[3] Particulars regarding the Kneeleasy Apron Mat can be obtained from the makers, the Kneeleasy Apron Mat Co., 23, Roker Avenue, Sunderland.

[4] An illustrated description of the Enhill Bird Feeding Shelter can be obtained on application to P. Enhill and Co., 14, Masonic Buildings, Coventry.

kind of car, 23 × 15 × 11 inches, constructed of white pine, made to travel on a cable of galvanized wire, and is equipped with drinking cup, feeding rack, seed hopper, and hooks for attaching suet, etc. The cable can be attached to a post or tree in the garden or grounds, and then the car can be gradually drawn nearer to the nursery window, veranda, or shelter where the children are. Birds and children of all ages will be delighted with this means for refreshment and amusement.

THE "COLIBRI" PORTABLE GRAMOPHONE makes an ideal present for a patient who has to live the open-air life, and wants acceptable means for instruction and recreation.[1] It is small, portable, durable, and yet

CLOSED. OPEN.

THE "COLIBRI" PORTABLE GRAMOPHONE.

gives brilliant results with records of all sizes up to 12 inches. The instrument is constructed of metal and is thoroughly hygienic. It only needs to be seen and heard to be enthusiastically approved.

Those responsible for the tidiness and hygienic management of recreation rooms, etc., where patients in hospitals and sanatoria and nursing homes are permitted to smoke, will do well to make themselves acquainted with the advantages offered by a novelty which bears the descriptive designation of the "LITTLE NIPPA" ash tray.[2]

DOMES OF SILENCE are ingenious, simple, effective, domed steel circular plates which can be readily fixed to the legs of chairs and the like, and are particularly helpful in dealing with heavy furniture, serving as a kind of castor for structures standing on carpeted floors.[3] They are available in various sizes, and at prices of from 6d. to 1s. per set of four pieces. A companion series of felt studs has been introduced which are excellent for the attachment to chairs used in hospitals, sanatoria, and other institutions where the floors are of wood or specially hard materials, or covered with linoleum.

The ODOORO, invented by Sir John I. Thornycroft, LL.D., F.R.S., is a time and trouble saving door fastener which eliminates the

[1] Full particulars regarding the "Colibri" Portable Gramophone can be obtained on application to E. Child, 187, Belsize Road, Hampstead, N.W.

[2] Particulars regarding the "Little Nippa" Ash Tray may be obtained on application to the Nippa Company, D. Waldic and Co. (London), Ltd., Salisbury House, London Wall, E.C. 2.

[3] The manufacturers, the Domes of Silence (1920), Ltd., Hopetoun House, 5, Lloyd's Avenue, E.C. 3, are prepared to quote special terms for hospitals and sanatoria.

slamming and rattling of doors, fixes firmly by the pressure of a spring, and promises to be of special service in sanatoria and habitations conducted on open-air lines.[1]

The "Colossus" Fountain Parcel Pen is a novelty of real utility.[2] Utilizing an indiarubber nib, it provides means for producing notices, programmes, etc., and for addressing parcels, which will be readily appreciated by those working in offices connected with hospitals, sanatoria, and other institutions. The price is 3s. 6d.

The "Mario" Cooker is a very useful and economical device for preparing food, boiling water, etc.[3] It is very suitable for use in open-air shelters, where a supply of electricity or gas is not available. "Meta" fuel, which is put up in solid form, is used, and therefore

"META" FUEL.

"MARIO" COOKER.

is very handy to carry about, and can be packed away for an indefinite period without deterioration. As a matter of fact, the makers advocate storing the fuel in a damp place. It is very economical to use, and is entirely smokeless. The accompanying figures illustrate both the "Mario" Cooker and "Meta" fuel.

The "Nulli Secundus" Ever-Ready Bottle Gum is an ingenious, simple, economic, convenient, and effective appliance for the provision of an adhesive which can be used anywhere and at any time.[4] Patients in hospitals and sanatoria and children in open-air schools will find it invaluable in connection with many forms of handicraft, and certainly indispensable for repairing books and music, fixing snaps in albums, and all other work calling for "sticking" or "gumming." The bottle, which contains pure gum arabic, is fitted with a patent rubber nozzle, having a serrated lip, which allows the application of the adhesive to the required surfaces in a cleanly and reliable manner. There is no trouble about clogging or drying-up, and altogether this novelty must be considered the best of all gummers.

[1] Full particulars regarding "Odooro" can be obtained from the makers, C. Love and Sons, Foreland Road, Bembridge, Isle of Wight.

[2] The "Colossus" Fountain Parcel Pen is made by the Colossus Trading Co. (C. F. Dickson), 72, New Oxford Street, W.C. 1.

[3] The sole distributing agents in Great Britain for the "Mario" Cooker and "Meta" fuel are Messrs. Elmesan (London), Ltd., 66, Victoria Street, London, S.W. 1.

[4] The "Nulli Secundus" Ever-Ready Bottle Gum is supplied by Samuel Jones and Co., Ltd., Bridewell Place, E.C. 4, price 1s. each receptacle. Refills can be obtained at 4d. each, and bottles of pure gum arabic ready for use at prices varying from 8d. to 3s. 9d. according to size.

In tuberculosis, especially when the lungs and larynx are involved, gastro-intestinal troubles are common, and in no small proportion of these cases ulceration of the intestines sooner or later develops. And even in early cases autotoxæmia or even general infection may arise from the development of morbid processes in the intestinal tract. A considerable number of patients have gained much benefit from partaking daily of BULGOLAC, an effective lactic curdled milk, prepared by Mr. L. A. Hindley, and supplied regularly by post at reasonable prepaid rates.[1] This product is obtained by the use of a reliable culture grown in a bacteriological laboratory of one of the large London hospitals, and employed under strict hygienic conditions, only the best milk being used. Many doctors will be glad to know that this reliable and most palatable form of curdled milk can now be supplied regularly by post for their patients in suitable cartons.

MALTO-YERBINE is one of the series of justly popular maltine products, and is of special service in dealing with bronchial and other chest cases.[2] It is a combination of maltine and a preparation of "yerba santa" (*Eriodictyon californicum*), better known as the sacred herb of California. A dose of malto-yerbine at bedtime often soothes an irritable cough, lessens catarrhal states, and brings a night of refreshing sleep. Many cases of tuberculosis will be advantaged by the administration of malto-yerbine. It is free from anything which is affected by the Dangerous Drugs Regulations, and can be prescribed with morphine preparations or heroin as desired.

VITALIA MEAT JUICE (Liq. Hæmoglobin Dulc.) is a highly concentrated meat extract, having a high percentage (8 per cent.) of hæmoglobin, and likely to be of great value as a stimulant, tonic, and nutrient in all wasting diseases, and particularly in many cases of tuberculosis.[3] The preparation is free from extractives and deleterious drugs.

GENOXIDE is a British-made, stable, and pure preparation of peroxide of hydrogen of B.P. standard.[4] It is produced by a newly patented process for the manufacture of H_2O_2, and is available at a price which is about half that usually paid. This preparation will be of great service in hospitals and sanatoria for dealing with morbid conditions in which peroxide of hydrogen has proved of special service, such, for instance, as pyorrhœa alveolaris and oral sepsis, so commonly met with in tuberculous subjects. The retail prices are 4 ozs., 1s.; 8 ozs., 1s. 6d.; 16 ozs., 2s. 6d.

FLIT is an effective insecticide which during the springtide and summer will be appreciated in many hospitals and sanatoria, as well as for use in private houses.[5] It is employed as a spray in a special

[1] A specimen of "Bulgolac" may be obtained on sending 1s., in stamps, to Mr. L. A. Hindley, 119, Coniston Road, Bromley, Kent.

[2] Malto-Yerbine is supplied by the Maltine Manufacturing Co., Ltd., 23, Langford Street, N.W. 1.

[3] Specimens and particulars of Vitalia Meat Juice will be sent to any medical practitioner on application being made to Vitalia Limited, 17A, Boniface Street, Westminster Bridge Road, S.E. 1.

[4] Genoxide is a British-made product, manufactured by Genoxide, Ltd., Kingsway, Luton, Beds.

[5] Full particulars regarding the Flit combination outfit can be obtained on application to the Anglo-American Oil Co., Ltd., Albert Street, Camden Town, N.W. 1.

spraying appliance, and appears to clear habitations of troublesome flies, mosquitoes, ants, bugs, cockroaches, and other household pests.

Cod-liver oil for many years has been used empirically in the treatment of tuberculosis and other wasting diseases, and in a large number of cases with conspicuous advantage. We now know at least in some measure reasons why this animal product proves so beneficial. Cod-liver oil has become more firmly established as a sure favourite in the treatment of tuberculosis, and there are now no lack of admirable preparations in palatable and satisfactory forms. An admirable and justly popular preparation is the COD-LIVER OIL CREAM WITH HYPOPHOSPHITES AND PANCREATINE, supplied by Mr. R. Thomson of Elgin.[1] It overcomes the difficulties usually associated with the administration and assimilation of pure cod-liver oil. The preparation contains 50 per cent. of the finest cod-liver oil and is pleasantly flavoured, and can be easily digested by both young and old patients. Its value is enhanced by the fact that it is always supplied freshly prepared when ordered direct from Elgin, and all orders are despatched by return post. The manufacturers issue an attractive descriptive booklet, a perusal of which cannot fail to impress one by the many remarkable reports received in favour of this preparation. The cream appears to have won the favour of many of the leading medical men of this country, orders having been received from all parts of Great Britain, from the Orkney and Shetland Islands down to the Isle of Wight and Channel Islands. It is also sent abroad to India, Ceylon, Canada, Switzerland, and other countries. The cream is also being supplied to the leading hospitals and sanatoria in Scotland.

METAPHEN, or Di-Acetoxymercuri-4-nitro-2-cresol,[2] is a powerful mercurial germicide estimated to be 500 times the strength of phenol. It is claimed that it is non-irritating, non-staining, and non-toxic, and would appear to be likely to prove of much service in dealing with tuberculous subjects.

Under the general designation of NOVIO TOILET PAPER an excellent series of hygienic requirements in roll, packet, and carton forms are now available, and admirably meet the sanitary needs of patients and others in hospitals, sanatoria, nursing homes, as well as in connection with schools and ordinary habitations.[3]

[1] Specimens of this preparation will be sent to physicians on application being made to R. Thomson, Abbey Street, Elgin, Scotland. It is supplied in bottles at 4s., 7s., and 10s., according to size.

[2] Metaphen is supplied in 4-ounce bottles of a 1 : 500 solution. Particulars may be obtained on application to the makers, E. H. Spicer and Co., Ltd., 72, Wigmore Street, W. 1.

[3] The "Novio" specialities are manufactured by the Paper Cutting and Toilet Requisite Co., Ltd., Chadwick Works, 26, Grove Park, Camberwell, S.E. 5.

THE OUTLOOK.

TUBERCULOSIS RESEARCH.

TUBERCULOSIS still remains an unsolved medico-sociological problem. As long as this is so there will be an urgent need for research. In this country important investigations are being carried on under the auspices of the Committee of the Privy Council for Medical Research. This body has a number of committees undertaking investigations on special subjects. Among them is one dealing with Tuberculin constituted as follows: Captain S. R. Douglas, M.R.C.S., F.R.S., late I.M.S. (Chairman); W. Buckley, C.B.E.; L. S. T. Burrell, M.D.; Professor J. B. Buxton, F.R.C.V.S.; Professor Georges Dreyer, C.B.E., M.D., F.R.S.; J. Mackintosh; A. S. MacNalty, D.M. (Secretary); H. H. Thomson, M.D.; P. C. Varrier Jones, M.R.C.S.; G. T. Western, M.D.; and Professor T. B. Wood, C.B.E., F.R.S. Another is devoted to a consideration of the Bacteriology of Tuberculosis, and is composed of the following: Professor Georges Dreyer, C.B.E., M.D., F.R.S. (Chairman); R. G. Canti, M.D.; Professor S. L. Cummins, C.B., C.M.G., late A.M.S.; A. Stanley Griffith, M.D.; A. S. MacNalty, D.M. (Secretary). There is also a committee dealing with Biological Actions of Light. The members are as follows: Professor F. A. Lindemann, F.R.S.; J. E. Barnard, F.R.S.; H. H. Dale, C.B.E., M.D., F.R.S.; Captain S. R. Douglas, M.R.C.S., F.R.S., late I.M.S.; Professor Georges Dreyer, C.B.E., M.D., F.R.S.; Sir Henry Gauvain, M.D.; Leonard Hill, M.B., F.R.S.; J. Henry Sequeira, M.D.; and Edgar Schuster, D.Sc. (Secretary). The recently issued Annual Report contains matters of interest to students of the tuberculosis problem.[1] Reference is made to Dr. A. Stanley Griffith's bacteriological and serological studies relating to human and animal tuberculosis, and a summary of his work on the types of tubercle bacilli in various domestic animals is to be published shortly. Dr. H. H. Scott is completing a research on tuberculosis met with in warm-blooded animals in captivity, based on material obtained from the Zoological Society of London. Among other works in progress are studies of anomalous strains of tubercle bacilli, attempts to induce modification in virulence, and tests of the immunizing value of Calmette's vaccine and other artificially attenuated strains of tubercle bacilli. Professor S. L. Cummins, with the assistance of Miss C. M. Acland, has continued his inquiries regarding the value of sanocrysin in the treatment of tuberculosis in rabbits. A long series of experiments have been carried out on the development of resistance in the course of graded infections of guinea-pigs with tubercle bacilli. Dr. S. R. Gloyne has investigated the pathology of pleural adhesions in pulmonary tuberculosis, and finds grounds for believing that the rupture of adhesions at points where tubercle bacilli can be liberated from the tuberculous lung may be one of the causes giving rise to

[1] "Report of the Medical Research Council for the Year 1925-26." Pp. 161. London: H.M. Stationery Office. 1926. Price 3s. 6d.

pleural effusion complicating the operation for the production of artificial pneumothorax. Dr. J. W. S. Blacklock has carried on work in Glasgow upon the distribution in Scottish children of infections due to human and bovine types of the tubercle bacillus. He finds so far that nearly 90 per cent. of the pulmonary cases show the presence of bacilli of the human type, while 70 per cent. of cases of tuberculosis of bones, glands, and abdominal organs are of bovine origin. Dr. E. Crozier has carried out an inquiry regarding renal efficiency tests upon 100 cases of tuberculosis in the hospitals of the Welsh National Memorial Association. The Tuberculin Sub-Committee have continued their studies of the double intradermal test for the detection of tuberculosis in dairy cattle. Professor H. Möllgaard, of Copenhagen, has provided a quantity of "sanocrysin," or gold thiosulphate, and this has been used for the experimental treatment of tuberculosis in a number of selected centres. Dr. R. G. Bannerman, at Treloar's Cripples Hospital at Alton, has carried out observations on the treatment of tuberculous cases under light treatment. The report contains references to a number of papers in which are recorded the results of recent researches on various aspects of the tuberculosis problem. The references to work in other departments in many instances will be of interest to tuberculosis workers. Attention should be directed to the conclusions arrived at in regard to such remarkable substances as chloresterol and histamine. The former is a light-sensitive and light-storing body, and would seem to be influential in the production of one of the most serviceable of the vitamins—namely, that which is found naturally in cod-liver oil. Histamine would appear to be of importance in producing "shock"—alters the activity of the liver as a regulator of blood-pressure. It would seem as though the lungs were instrumental in the production of histamine. It is interesting to note that a grant-in-aid of £135,000 was provided by Parliament for the expenditure of the Medical Research Council during the year covered by the report now just issued.

THE NATIONAL ASSOCIATION FOR THE PREVENTION OF TUBERCULOSIS.

The National Association for the Prevention of Tuberculosis, the headquarters of which are at 19, Tavistock Square, W.C. 1, with a Special Appeal office at 20, Hanover Square, W. 1, has just issued a handsome, illustrated, sixty-eight-page "Historical Sketch, 1898-1926." A Foreword states that the Association was inaugurated by King Edward VII., when Prince of Wales, at a meeting in Marlborough House, December 20, 1898. The booklet furnishes an effective record of the chief events in the history of the Association during a quarter of a century. The Association has now entered upon a Forward Movement inaugurated by the Prince of Wales, the President of the Association, on July 16, 1926. The Foreword closes with these words: "The assumption of responsibility by the State has not lessened the need for the effective campaign of the Association. In presence of so universal a menace it is essential that an interest in tuberculosis commensurate with its disastrous consequences should be aroused throughout the nation. Every man, woman, and child could do something against the common enemy if they only knew how. The National Association

exists to show the way." The report contains full-page portraits of the late King Edward VII., King George V., and the Prince of Wales. There are also portraits of the late Sir William Broadbent, the first Chairman of Council, and the late Earl of Derby, the second President of the Association. There are several maps indicating centres of the educational activities of the Association, and the distribution of tuberculosis in 1898 and 1924 as indicated by death-rates. A graphic chart demonstrates the reduction in the ravages of tuberculosis in Great Britain, the deaths in 1898 (70,279) being compared with those in 1923 (46,578). The various activities of the Association are described and indicated by maps, and in a series of illustrations pictures are given of some of the sanatoria and colonies now at work in this country. All interested in practical measures seeking the prevention and arrest of tuberculosis should procure a copy of this artistically produced and informing historical sketch.

AN INTERNATIONAL ALPINE UNIVERSITY.

Professor J. Kollarits and his confreres are developing a scheme for the founding of an International Alpine University, comprising all the customary faculties, in the famous health resort of Davos in Switzerland. The objects of such an ambitious undertaking are formulated as follows: (1) To enable tuberculous University students who, though not too ill to continue their studies, should nevertheless carry on a climatic cure under favourable conditions and with the advantages of regular University study; (2) to render the strengthening mountain climate accessible to students of weak constitution, who ought to take precautionary measures, without interrupting their studies; (3) to promote acquaintance between professors and students of different nationalities, and to bring them into close touch with one another; (4) to provide means whereby University students can enjoy Alpine winter sports under expert supervision in the intervals of study; (5) to undertake research work in regard to the high mountain climate and other scientific questions associated with altitude, etc.; (6) to study comparative racial and other scientific questions of international importance. Professor Kollarits is of opinion that the foundation, organization, administration, and maintenance of the Davos International University should be undertaken by a Board of Governors—a curatorium appointed by the nations participating in the scheme. This curatorium would control the financial contributions of the participant nations and appoint the professors and other officers and employees of the University. The participating nations would provide their annual Budget for the International University at Davos. The instruction should be imparted in the English, French, and German languages. It would, moreover, be open to every State to found lectureships in their own or in any of the international languages. Opportunity would be afforded for every State to arrange that any scientific subjects which it regarded as of special importance should be taught by the chair or chairs it has founded. With regard to the medical faculty of the University, it is suggested that the teaching of the theoretical subjects should in the first instance be instituted for the students of the first term, and a section for Tuberculosis and Alpine Biology arranged with courses of about six weeks' duration for young

doctors. The inclusion of the other branches would then follow with the further development and gradual extension of the University The degrees or diplomas of the University would perhaps be given validity in the homeland of the student-patients. All interested in Professor Kollarits' scheme should communicate with him at House Mark, Davos-Platz, Switzerland.

NOTES AND RECORDS.

The National Association for the Prevention of Tuberculosis, the headquarters of which are now at 19, Tavistock Square, W.C. 1, will hold its Thirteenth Annual Conference in London, June 30-July 1.

The International Union against Tuberculosis will gather in Conference at Rome in 1928.

Leysin has become the resort of medical advisers from all parts of the world. Dr. Rollier after the war organized post-graduate courses, which were attended by doctors of many nations. These courses proved so popular and were attended by so many visitors that it became impossible to accommodate the large numbers desiring to participate. Moreover, the ordinary work of the clinics was seriously interfered with. Dr. Rollier has consequently been reluctantly compelled to discontinue his large international gatherings of medicals for study at Leysin, and has instead adopted a system whereby frequently repeated small courses are given lasting for two or three days, and being conducted on informal lines. Dr. Rollier, or one assistant, is always glad to welcome medical visitors, and can usually take them round the clinics and explain his methods. Clinical demonstrations are held twice a week all the year round on Tuesdays and Fridays. Medical men and women desirous of visiting Leysin and seeing something of Dr. Rollier's wonderful work should communicate with him some time before the date proposed for their desired visit.

The Department of Commerce of the United States announces that death-rates from tuberculosis are decreasing. Lower death-rates from tuberculosis (all forms) were registered in 1924 than in 1900 for each age period for each sex in the Registration States of 1900. The amount of this decline in death-rates ranged from 73 per cent. for females under 1 year of age to 37 per cent. for females aged 15-19 years. Specific rates per 100,000 population at each period are given in the following table: This decline in tuberculosis death-rates is not limited to the United States. Similar declines are recorded in the death-rates of England and Wales. A comparison of the 1924 death-rates from tuberculosis (all forms) for England and Wales with the corresponding 1924 rates for the United States Registration States of 1900 reveals lower rates in the United States for each age period up to age 55 for each sex. The greatest per cent. difference up to age 55 was for males aged 5-9 years, the respective rates for the two countries being 37 for England and Wales and 15 for the United States, the latter rate being 59 per cent. lower than the rate for England and Wales. The least per cent. difference up to age 55 was for females aged 20-24, the respective rates for the two countries being 153 for England and Wales and 146 for the United States, the latter rate being 5 per cent. lower than the rate for England and Wales. Comparisons of the tuberculosis death-rates for the two countries for

ages above 55 show much lower rates in England and Wales than in this country—so much lower, in fact, that apparently the only explanation is a tendency in England and Wales to certify at the older ages bronchitis as the cause of death instead of tuberculosis.

The Joint Tuberculosis Council has appointed a Committee "to consider how the Tuberculosis Service may be rendered more efficient." The members of this committee are: Sir Henry Gauvain, Prof. Lyle Cummins, Drs. L. S. T. Burrell, W. Brand, Lissant Cox, S. Vere Pearson, E. Ward, A. Lyndon, D. P. Sutherland, and H. Vallow. The general practitioner is represented by Dr. Lyndon of the B.M.A., Dr. L. S. T. Burrell represents the private consultant, and Dr. Vere Pearson the private sanatorium. Drs. D. P. Sutherland and H. Vallow represent respectively the tuberculosis officers at Manchester and Bradford, and Dr. W. Brand the Metropolitan area. Drs. Lissant Cox and E. Ward will be able to give the point of view of counties and rural districts, while Sir Henry Gauvain will consider the problem from the surgical side. After fourteen years' experience of the working of tuberculosis schemes, some useful suggestions should be forthcoming. Some modifications in methods are certainly necessary, and no doubt will result from the statistical returns (37/T) recently asked for by the Ministry of Health. The appointment of this special committee is timely, for it is better that reforms should originate from those engaged in tuberculosis work than be imposed from without. Further particulars may be obtained from the Hon. Secretary of the Council, Dr. Ernest Ward, Torquay Road, Paignton, Devon.

The Tuberculosis Society in conjunction with the Society of Superintendents of Tuberculosis Institutions is arranging for a provincial meeting to be held in the Pathological Lecture Theatre at Oxford from April 7 to 9. Professor Lyle Cummins will open a discussion on "The Bovine Tubercle Bacillus in Immunization," and Dr. Leonard Hill will deal with "The Defensive Mechanism of the Body against Tuberculosis from the Physical and Chemical Aspect." Mr. G. R. Girdlestone, F.R.C.S., Honorary Surgeon to the Wingfield Orthopædic Hospital, Oxford, and Dr. E. Obermer, of the Cambridge Tuberculosis Colony, Papworth, will read papers relative to the same subject. Papers will be given by the following: Dr. John Freeman, Director of the Department of Clinical Bacteriology, St. Mary's Hospital, London, on "The Defensive Mechanism of the Body against Tuberculosis from the Bacteriological and Immunological Side"; Dr. A. G. Gibson, Hon. Physician to the Radcliffe Infirmary, Oxford, on "The Secondary Infections in Relation to the Progress in Pulmonary Tuberculosis"; and Dr. A. D. Gardner, Standards Laboratory, Department of Pathology, Oxford University, on "The Laboratory Diagnosis of Tuberculosis." Dr. J. Middleton Martin, County Medical Officer for Gloucestershire, will open a discussion on "The Gaps and Flaws in the Public Health Administration of Tuberculosis"; and Dr. D. P. Sutherland, Tuberculosis Officer of Manchester, and Dr. Peter W. Edwards, of the Cheshire Joint Sanatorium, will read papers dealing with the same subject from their special points of view. Members are invited to visit the Wingfield Orthopædic Hospital, and also the new Osler Pavilion. Accommodation is available for members of both sexes at Somerville College at an inclusive charge of £2 for the period of the meeting, or *pro rata*. Non-members interested in tuber-

culosis will be welcomed as visitors. It is hoped that all able to avail themselves of this opportunity for reunion will communicate with the Hon. Secretaries at once: Dr. F. J. C. Blackmore, The Tuberculosis Dispensary, Maxey Road, Plumstead, S.E. 18; or Dr. J. R. Dingley, Darvell Hall Sanatorium, Robertsbridge, Sussex.

The Annual Congress of the Royal Institute of Public Health will be held in Ghent, Belgium, June 1-6, and will afford a splendid opportunity for medical and social workers interested in problems of personal and public health to learn something of the fine services which are making for progress in Belgium. Lord Burnham is the President. A very attractive programme has been provided. The scientific meetings will be conducted in five sections: State Medicine and Municipal Hygiene; Naval, Military, Air and Tropical Diseases; Industrial Hygiene; Pathology, Bacteriology, and Biochemistry; and Women and Public Health. The Lord Mayor of London and the sheriffs are to participate in the Congress. The inclusive charge for first-class travelling, hotel, and a special excursion will be £11 11s. It is stated that the Minister of Health is prepared to consider applications from sanitary authorities for sanction of the payment of the reasonable expenses of delegates, and that similar sanction has been allowed by the Scottish Office. Further information may be obtained on application to the secretaries, 37, Russell Square, W.C. 1.

At the forthcoming 95th Annual Meeting of the British Medical Association which will be held in Edinburgh, July 19-23, there will be a Tuberculosis Section presided over by Prof. S. Lyle Cummins, with Drs. William Brand, S. Vere Pearson, and Ernest Watt as Vice-Presidents. The Hon. Secretaries are: Dr. J. C. Simpson, Gracemount Farm, Liberton, Edinburgh, and Dr. R. R. Trail, King Edward VII. Sanatorium, Midhurst.

At the Cambridgeshire Tuberculosis Colony at Papworth two cottages for recovered tuberculosis patients are to be erected as a memorial to the late President of the Settlement, Sir Thomas Clifford Allbutt. The residents are to be chosen from among those who could not, under ordinary circumstances, support themselves and their families. This scheme will appeal to believers in the colony system for recovered tuberculous cases, as well as to the many admirers of the late Prof. Sir Clifford Allbutt. It is hoped that the cottages will be ready for occupation in the coming summer. Contributions to the Fund should be sent to Mrs. Marcus Dimsdale, Papworth Hall, Cambridge.

The Editor will be glad to receive copies of Annual Reports from Medical Officers of Health, Tuberculosis Officers, and Medical Superintendents of Sanatoria, together with circulars, pamphlets, and all other publications relating to tuberculosis.